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SHOCK.

By SIR HUGH DEVINE, M.S., Hon. F.R.C.S. Eng., F.R.A.C.S.,

Acting In-Patient Surgeon, Saint Vincent's Hospital, Melbourne.

In total war the lethal technique seems to be largely designed to achieve its object not only by the missiles liberated or discharged by great explosive action, but also by the production of shock caused by terrific explosion. Fatal shock, therefore, claims a great number of civilian as well as military victims—fatal shock from extensive tissue injury, from explosive blast and from extensive burns. It is thus not surprising to find that the literature of the last two or three years is rich in investigational work in regard to the nature and cause of shock. Feeling that it would be timely to review those aspects of this work which might provide an up-to-date working basis for the diagnosis and treatment of shock, I have made the following comparatively brief and perhaps rather selective survey from a wide field of literature.

A brief historical mention of earlier work is informative and also helpful in understanding the stages of thought which have gradually led up to the present conception of the nature and treatment of shock. Sherrington and Copeman in 1893[(80)] found that in animals abdominal operations caused an increase in the specific gravity of the blood. Cobet in 1897[(81)] made the observation that there was a concentration of the blood in a state of shock. Cannon, Frazer and Hooper in 1915[(7)] stated that in shock uncomplicated by bleeding there was an increase in the number of red blood cells and of the hæmoglobin content, and that in shock complicated by hæmorrhage the hæmoglobin value was relatively low in comparison with the red blood cell readings. Mann in 1935[(37)] showed that a typical picture of shock, as we now know it, followed visceral trauma, and that the basis of the condition was a loss of circulating fluid.

Some of the more important theories of shock that have been put forward at various times are: nervous vasomotor exhaustion (Mitchell, Morehouse and Keen, 1864[(39)]); exhaustion (Crile, 1897-1920,[(12)] O'Shaughnessy and Slome, 1935[(44)]); inhibition (Meltzer, 1908[(38)]); hyperactivity of the adrenal medulla (Bainbridge and Trevan, 1917,[(2)] Freeman, 1933[(13)]); exhaustion of the adrenal medulla (Sweet, 1918[(49)]); adrenal cortical insufficiency (Swingle, Pfiffner, 1933[(45)]); traumatic toxæmia (Cannon, Bayliss and British Medical Research Committee, 1918[(8)]); traumatic metabolites causing capillary atony and tissue anoxia (Moon, 1932-1938[(32)]); local fluid loss (Phemister, 1927-1930,[(33)] Bialock, 1930[(4)]); progressive oligæmic anoxia (Harkins, 1941[(21)]).

The term shock is generally applied to an acute circulatory failure which follows closely in the wake of severe trauma or of chemical or toxic injury. If, however, this circulatory disturbance is analysed, it will usually be found that it is a complex of two acute circulatory conditions: an acute, collapse-like condition immediately following the trauma; and a rather insidious, more serious circulatory deterioration, which comes on just as the patient is recovering from the first condition. This first phase of shock is sometimes called primary shock, sometimes neurogenic shock. It comes on dramatically, is rather transient, is not very lethal and is neurogenic in origin. The second phase of shock is variously termed secondary, traumatic, operative, surgical, oligæmic or hæmogenic shock. (For the purposes of this review it will be called hæmogenic shock.) This phase is gradual and somewhat delayed in onset, grows steadily worse, and is more or less lethal in its effect.

To the classification of shock into the primary and secondary types there are many objections, into which it is not necessary to go.

The most rational classification seems to be that of Bialock (1934),[(4)] which is as follows:

(i) Neurogenic. This comprises primary shock and shock following spinal anæsthesia or associated with fainting.

(ii) Hæmatogenic. The essential feature of this type of shock is that loss of blood volume is the primary factor that starts a chain of circulatory changes; fall of blood pressure is a secondary feature.

(iii) Vasogenic. The action is directly on the blood vessels. Histamine shock is of this type.

(iv) Cardiogenic. In this type the failure is central in contrast to the three previous types, in which the failure is peripheral.

Neurogenic Shock.

Neurogenic shock is commonly seen in injuries which affect tissue rich in nervous elements, such as injuries of the brain. It is also particularly obvious after trauma to the nerve tissue of the sympathetic system. It therefore frequently follows operations which involve the abdominal viscera and the serous membranes, such as the pleura and peritoneum. Neurogenic shock can be brought about psychically; death from this form of shock has followed great terror.

In neurogenic shock symptoms follow directly on the injury. The patient becomes pale and sweats profusely, his pulse rate rapidly increases, and his blood pressure drops and may remain low for an hour or two. His extremities are warm, as the peripheral arteries are dilated (vasoconstrictors are therefore of value in this form of shock). In the recumbent posture and with treatment he soon begins to recover.

Hæmogenic Shock.

Hæmogenic shock is seen as a result of extensive or of violent injury to tissue, particularly to muscle, and it is therefore a feature after injury from high explosives. The shock following serious and extensive burns is typically hæmogenic.

Hæmogenic shock comes on insidiously an hour or two after the injury and deepens rather quickly. It presents a characteristic clinical picture. The patient grows paler and paler. His pulse becomes thready and running, his extremities become cold (compensating vasoconstriction), his respirations are rapid, his veins collapsed and his eyes deep-sunken. But the most tangible feature of hæmogenic shock is the progressive and steady fall of blood pressure. Coming on after a crush injury, hæmogenic shock may present a clinical picture almost similar to that which is seen when corpuscles and plasma are lost; that is, it may present a picture as of hæmorrhage without a history of bleeding. McMichael[25] would call this type of shock "crush syndrome". According to this writer, the acute circulatory manifestations of this form of shock may merge into a train of serious renal changes comprising the appearance of myohæmoglobin in the urine, a decreased urinary output, and finally a progressive renal failure with rising blood urea level and other biochemical changes.

The following case, quoted by Harkins,[21] is a good example of hæmogenic shock.

> J.J., a soldier aged twenty-six years, was run over one morning by a light tank and both legs were severely crushed. He became temporarily unconscious, but was able to talk on the way to the hospital shortly before noon. Three broken bones were easily set; there was no visible bleeding; and after taking a sedative he felt well enough to smile and appeared to be on the road to recovery. In the afternoon, however, he became restless; his face showed an anxious expression, with pallor; his pulse became weak and rapid, his skin cold and clammy, and his breathing laboured and shallow. Toward evening he sank into coma and died.

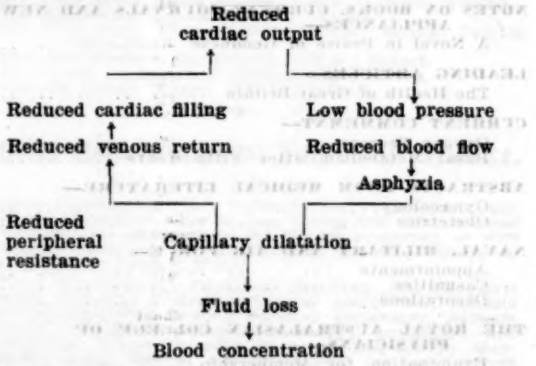
This soldier died of hæmogenic shock.

The Nature and Cause of Hæmogenic Shock.

In respect to the nature and acuse of hæmogenic shock, there has been much investigation, particularly in recent years. As a result of important work by Phemister[26] and Blalock,[27] there is now more or less agreement that the circulatory conditions in this form of shock are always the same, and that a definite "march" of pathological-physiological circulatory changes takes place. In this "march" plasma leaves the blood through capillaries rendered permeable to colloids by a toxic factor arising from injured tissue. A progressive decrease of blood volume follows, and as a result of this diminishing blood volume the systolic output becomes less and less and the blood pressure slowly falls.

Consequences of this circulatory deterioration are: (*a*) the development of a stagnant anoxia—oxygen, carried now in a stagnating circulation, does not reach the tissues in adequate concentration, and a tissue asphyxia results, which causes more permeability of the capillaries with further loss of plasma; (*b*) the occurrence of hæmoconcentration; (*c*) the onset of peripheral vasoconstriction, which develops to compensate for the diminished blood volume (vasoconstrictors are, therefore, of no value in this form of shock); (*d*) a lowering of venous pressure; (*e*) a lowering of basal metabolism; and (*f*) a diminishing of renal excretion.

McDowall[28] depicts this vicious circle ("the death cycle") as follows:



In hæmogenic shock there develop too, perhaps in relation to these circulatory changes, an insufficiency of the cortical and an overaction of the medullary part of the adrenal gland, and according to Scudder[29] a hyperpotassæmia (an increase of potassium in the plasma).

Harkins[21] succinctly summarizes the features of hæmogenic shock when he terms it "a progressive vasoconstrictive oligæmia anoxia".

But this cannot be the whole story of the acute circulatory disturbance in hæmogenic shock; loss of blood volume is not a complete explanation. Moon[30] thinks that there is also an increase in the volume capacity of the vascular system caused by dilatation of capillaries, the walls of which have been spoilt by the action of tissue metabolites emanating from tissue injury. Continental observers (Ewig, Klotz, König[27]) would agree with this. They believe that "peripheral failure" is a factor in the causation of shock—that is, a dilatation of the capillaries the result of toxic action from products of nuclear degeneration and from crushed muscle juice. Wilson[26] holds that volume loss alone does not explain the oliguria, which is seen in severe cases of shock after burns and which is not relieved by the addition of fluid (no matter how much) to the circulation.

Hæmogenic shock is, too, brought about by a volume loss of corpuscles as well as of plasma—that is, by copious hæmorrhage. In this case there may be as well some plasma loss into the tissues. When shock is caused in this way the clinical picture is somewhat different. Here, in addition to the usual manifestations, the patient is thirsty, his respirations are deeper; in the initial stages his hæmoglobin value is moderately reduced (perhaps to 80%) and in the later stages it is profoundly reduced (perhaps to 50%), when, owing to the lessening of osmotic pressure from loss of protein, the blood has had time to become diluted by the inflow of tissue fluid.

Early Recognition of Shock.

A practical outcome of all this knowledge of the nature of shock syndromes is that we may take it for granted that, in total war, a majority of the wounded will exhibit

a variable combination of these phases of shock; that is, they will exhibit shock resulting from severe insult to the nerve elements, shock arising from the loss of plasma, and shock from the loss of whole blood. And if this is the case, then the extent to which one or other of these phases predominates will be a factor in deciding the urgency for, and the nature of, shock therapy.

To recognize that a state of shock is imminent, to be able to identify the onset and to forecast the nature and severity of shock, not to have to wait for blatant and therefore late manifestations of serious shock when a vicious circle arising from blood-starved coronary arteries and oxygen-starved tissues will have come into action, is perhaps one of the most important premises on which present-day shock therapy is based. This early recognition of the onset of serious shock permits timely restoration of the blood volume, and thus enlists to the full the compensating action of the heart and reduces to a minimum any secondary effect of asphyxiated tissues.

In the majority of cases little difficulty arises in the identification of shock. The nature of the shock and the depth which it may attain can generally be forecast from the nature and severity of the injury. A closed brain injury or a visceral injury will be associated with neurogenic shock; injuries in which a large part of the body, such as the thigh, is shattered by high explosives, injuries in which tissues are severely or extensively crushed, injuries in which blood is copiously lost, injuries combined with deep and extensive burns, will all almost certainly be accompanied by serious hæmogenic shock.

Not infrequently, however, appearances of shock may be misleading. McMichael[35] points out that in air raids under "panic" conditions, patients who have been exposed to cold, who are covered with dirt from falling buildings, and who are terrified, present a ghastly appearance and are accepted as suffering from shock, when actually they manifest little objective criteria of shock. These subjects not infrequently receive massive transfusions of blood.

Indications of a neurogenic origin of shock are the following: (i) The injury has affected tissue rich in nervous elements—the brain for instance; (ii) the shock has followed immediately in the wake of the injury; (iii) the blood pressure is low at first, but it soon begins to rise; (iv) the extremities are warm—evidence of vasodilatation; and (v) the patient soon recovers with treatment in a supine position.

Indications of the hæmogenic origin of shock occur in the following sequence: there is a history of extensive tissue injury, a delayed onset, a "march" of the distinctive clinical picture already described, an increasing hæmoconcentration, and a persistently falling blood pressure.

In the search for early signs of hæmogenic shock it must be remembered that hæmoconcentration and low blood pressure (usually regarded as indications to institute shock therapy) are really late criteria. For, as blood volume decreases, a compensatory vasoconstriction sets in and keeps up for a time the height of the blood pressure, and hæmoconcentration does not occur until a considerable amount of plasma has been lost into the tissues. Notwithstanding this fact, however, hæmoconcentration readings (or hæmoglobin values) are of considerable significance, for hæmoconcentration is an earlier criterion than low blood pressure, and further, these readings are easily obtainable and most helpful in determining the presence and progress of hæmogenic shock. Blood pressure observations serve as a confirmation of a state of shock and as a guide to treatment.

Indications that hæmorrhage is the cause of hæmogenic shock are as follows: (i) evidence or a history of hæmorrhage; (ii) restlessness and thirst, a running pulse, and respirations deeper than usual; (iii) low blood pressure; (iv) much reduced hæmoglobin value (when there is a combination of "crush injury" and hæmorrhage, hæmoconcentration will vitiate any significance of hæmoglobin values).

"Cardiogenic Shock": Collapse.

It ought perhaps to be pointed out, in connexion with the recognition of shock, that hæmogenic shock is sometimes confused with an unusual form of acute circulatory disturbance after injury, which is of cardiac rather than peripheral origin. This often follows stress and strain, accidents and operations, in persons who have had a "crippled" circulation to start with. The "crippling" is often unrecognizable by the ordinary means of clinical examination; the cardio-vascular mechanism gives little outward manifestation—it is insufficient in that it lacks the necessary "circulatory reserve" (Ewig[32]). With the imposition of the circulatory strain of injury or of operation, such a circulation breaks down and an acute circulatory failure, like a state of shock, occurs.

This collapse condition exhibits recognizable characteristics. The blood pressure is not low; the venous pressure is high, the arm and neck veins being distended; the cheeks are not so sunken, nor are the eyes so deep-set as in shock; and the patient likes to sit up. In these cases the blood volume may actually be increased.

It is necessary to draw attention to this type of acute circulatory disturbance, because the principles on which its treatment should be based are exactly the opposite of those which underlie the treatment of hæmogenic shock. Here there is an increase in the amount of circulating blood and a generous addition of fluid to the already overloaded circulation—an addition so beneficial in shock—may kill the patient.

The Prevention of Shock.

The field of prevention of shock is one worthy of keen endeavour. Shock is eminently preventible; many causes of shock can be foreseen and avoided.

Common sense in regard to food and clothing is important. Soldiers going into battle should have a diet rich in protein (a store against plasma loss), adequate in fluid (two or three litres, to forestall dehydration), and abundant in vitamins, especially vitamin *C* (to facilitate the healing of wounds). Troops should wear light clothing in summer to avoid exhaustion, and warm clothing in winter with the object of conserving heat; when possible, wounded men should be changed quickly out of wet clothes, because these are a fertile cause of heat loss.

Some psychic help is good. Injured soldiers coming out of the line should receive reassurance in regard to their injury, be placed in a position out of the danger area, and given a cigarette and a hot drink (Somerset[40]).

Proper and prompt first aid ministrations minimize shock. Some of these are: a change into dry clothes; the use of warm blankets; the "head-down" position; morphine in adequate doses to relieve pain (too much morphine increases tissue asphyxia and intensifies shock); prompt control of bleeding; the faithful immobilization of fractures; the avoidance of "fiddling" with wounds and of their contamination by fingers and unclean objects; the immediate application of an aseptic or an antiseptic dressing; the early use of bacteriostatic drugs; the application of moderate heat—too much heat causes vasodilatation and sweating, lowers the blood pressure and increases the shock (Blalock[33]).

On special point (Wilson[46]) in regard to first aid ministrations should be remembered: temperance in the use of tourniquets should be practised—hæmorrhage should be arrested when possible by the use of a pad and pressure. When tourniquets must be used, the time of their application must be recorded on the patient's emergency medical tag, and instructions must be given that they are to be momentarily released at intervals. When the circulation to large areas of tissue, such as that to the thigh, is constricted for too long, hæmogenic shock may be caused when the tourniquet is released, especially if it is released suddenly.

Preventive measures to minimize shock in operations undertaken for the injury which has given rise to the shock yield fruitful results. Badly performed operations can cause or deepen shock. Dissections should be clean, decisive, sharp and along tissue planes—not detailed. The anæsthetic should be chosen to suit the type of injury and should be lightly given. Tissue should not be handled or bruised. Operative manipulations should be speedy, gentle and bloodless. Peritoneal cooling and exposure and visceral trauma should be avoided.

The Treatment of Shock.

Promptitude in Treatment.

Hæmogenic shock should be promptly treated. If a systolic blood pressure as low as 60 millimetres of mercury is allowed to remain for more than one hour, the nervous centres responsible for the maintenance of peripheral resistance are impaired by tissue asphyxia and the shock merges into "irreversible" (irrecoverable) shock (McDowall[(29)]). Thus early treatment of serious hæmogenic shock is an essential principle of treatment, and wounded persons suffering from this type of shock should have a prior right to evacuation—their lives can be saved.

Apart from other considerations, "if the blood pressure remains persistently below 90 millimetres of mercury for more than an hour, transfusion must be begun at once. A falling blood pressure, whatever the figure, usually necessitates transfusion." (McMichael.[(30)])

With the object of prompt as well as efficient treatment, the management of shock casualties in total war is highly organized—or should be. In hospitals there are resuscitation wards and specially trained resuscitation teams to staff them. There are "taking" and "giving" transfusion teams. In Manila there were at one time 600 wounded waiting for attention, and resuscitation teams trained in the diagnosis and treatment of shock "combed" the wounded so as promptly to recognize and treat those who were suffering seriously from shock (Colonel Carroll[(31)]). In air raids there are extra resuscitation teams, and extra nursing staff is on hand, so that if there is a surge of such patients, no delay in their treatment will occur. The operating room is kept informed in regard to the progress of shock treatment, so that operating times can be organized without delay. Lieutenant-Colonel Julian Smith writes of his experiences in the Middle East.[(32)] His views may be summarized as follows:

Facilities for resuscitation (including intravenous methods) should extend to the main dressing stations and sometimes to advanced dressing stations and mobile sections, because few wounded men require immediate operation, but many may be in desperate need of an immediate blood transfusion. Before the battle, blood should be collected from Group II and Group IV donors, and stored in an ice box. The store can be replenished, from time to time, from the walking wounded. The medical officer in charge of resuscitation should be an expert in blood transfusion, because blood transfusion in a forward area must be given under very great disabilities; the surgical team loses a great deal of its efficiency if it lacks the services of a good transfusion officer. In all surgical teams operating at main dressing stations a third member should be added to the team, his duties being resuscitation before and after operation.

Shock in Head Injuries.

Major I. Douglas Miller[(33)] writes as follows:

Immediately after a concussive head injury a patient may appear to be profoundly shocked, but by the time he is brought to medical attention the appearances of shock usually no longer dominate the picture.

Patients with severe closed head injuries do not as a rule present a picture of sustained shock unless there is some concomitant bodily injury. As closed head injuries should not be placed with their heads low, the question of position in a shocked case may seem to be a difficult problem; but the fact is that this dilemma hardly ever arises.

Patients who have sustained severe open head wounds, with extensive scalp injury and fracture of the skull, are usually profoundly shocked. This state, due primarily to loss of blood, is best combated by rest and warmth, transfusions of blood or plasma.

In these cases nothing will aggravate shock as much as movement and interference. It is therefore a fortunate dispensation that we have longer time at our disposal than with injuries elsewhere. Provided that bleeding is stopped, these compound wounds may with advantage be left as long as 24 hours before being surgically treated and it is usually safe to wait 48 hours.

In war conditions it has sometimes been advisable to leave them longer. There is no justification for hurrying a shocked head injury into operation, and so subjecting him to the extra trials of movement and interference.

At the end of 24 hours the patients should have recovered sufficiently to stand either operation or evacuation to a surgical centre. It must be remembered that if patients have to be evacuated they stand movement very much better before than after operation.

It is therefore often possible within the allotted time to allow a patient to recover from shock and then to be evacuated to some suitable centre where his wound can receive thorough treatment.

Shock in Chest Injuries.

After the removal of obvious foreign material, and without excision of the edges of the wound, sucking wounds of the chest should be immediately closed in forward areas with through-and-through silkworm gut sutures (Littlejohn[(34)]). This early closure greatly lessens the development of shock during transportation.

Shock in Abdominal Injuries.

Patients who have intraperitoneal hæmorrhage or who have suffered penetrating wounds of hollow organs must be promptly subjected to operation. But even these patients, in the short time available, can be given some intensive shock therapy—transfusion of blood if this is immediately available, and, if it is not, of plasma or serum, which is usually on hand. It should be noted that, since the treatment of shock has come to be so effective, there is an increasing tendency to delay too long before operation is undertaken in these cases. Lives may be lost in this way. A surgeon working skilfully, gently and quickly, in conjunction with an expert anæsthetist, and after the patient has had some faithful shock therapy, can afford to operate with little delay, even though the circulatory condition is fairly bad; at any rate, he can operate while a transfusion is being given; his operation will be far and away the best treatment for the rapidly developing shock arising from a continuum of peritoneal trauma and absorption of toxins.

Anæsthesia in Shock.

In the field, ether given by the "open" method is the anæsthetic of choice in shock, chiefly because it must often be given by non-medical personnel (Julian Smith[(32)]). Sachs[(35)] showed that ether, skilfully administered, has little effect on the blood volume and is not shock-producing; lavishly given, however, it can produce a certain amount of chemical shock.

Nitrous oxide gas and oxygen is perhaps the most beneficent anæsthetic agent for the shocked patient. But it needs complicated and cumbersome apparatus; it calls for a skilled anæsthetist; it must be suitable for the subject; for an abdominal operation it requires a skilful surgeon, or shock will be produced rather than avoided. As a routine anæsthetic agent for lessening the production of shock its use is therefore confined to properly equipped hospitals.

For short operations "Pentothal Sodium" given by the intravenous route has a place in limiting the production of shock.

Because one of its effects is to bring about a circulatory depression which is akin to secondary shock, spinal anæsthesia is bad anæsthesia for a patient suffering from shock. Its use for battle casualties has therefore been deprecated by Lieutenant-Colonel Julian Smith.[(32)]

Restoration of the Blood Volume.

When patients suffering from shock arrive in the resuscitation ward, they may have received some of the preliminary shock therapy described under the heading "Prevention of Shock". Any necessary treatment that has not already been carried out is instituted. The main attention will then be directed to treatment designed to restore blood volume.

With regard to the restoration of blood volume, McMichael[(30)] makes the following statement: "Broad guiding rules for the treatment of shock in this respect are: (1) Adaptation of treatment to the clinical type; (2) observation of the results; (3) recognition of improvement sufficient to justify therapeutic modifications."

Preliminary Efforts to Restore Blood Volume.—In the circumstances in which severe shock is incurred, some loss of blood volume may be due to dehydration from lack of fluid intake, from loss of fluid from sweating, or from vomiting. Therefore, as an immediate measure, while preparations are in train for a blood transfusion, this fluid loss should be made good by the intravenous administration of normal saline solution or of saline solution and 5% glucose. Not only does this supply water lost in various ways, chlorides which may have been lost through vomiting, and sodium (advantageous when adrenal hormonal action is disturbed by disorder of the adrenals), but also it has a beneficial action on the vasoconstriction that is choking off blood from the vascular capillary bed.

Shock from Blood Loss.—If the shock is mainly the result of loss of blood (corpuscles and plasma), then it is clear that blood is the ideal fluid for restoring the blood volume. The quantity of blood administered must, however, be governed by the needs of the patient, as indicated by his general condition, by his hæmoglobin readings, and by his blood pressure. The regulation pint of blood that is usually given (probably because it is the standard amount usually taken from the donor) is frequently not enough to make up the loss in blood volume; it may be necessary to give two or three pints to obtain an effective restoration of the blood volume. The weakness in transfusion treatment for shock usually is that "it is too little and too late". Lundy and his associates[20] give large quantities of blood and state that dramatic results are obtained from "massive" transfusions. When the blood pressure reaches 100 to 110 millimetres of mercury, the rate of transfusion should be slowed (McMichael[33]). De Bakey[13] points out that in a quickly given transfusion there is little danger of "speed shock"—an observation of some importance in relation to hurried transfusions which must be given in forward battle areas. There can be little doubt that the best source of blood is the donor when he is at hand—that is, fresh blood. This, however, is not always available at short notice. In this case the blood must be obtained from a blood bank. Lieutenant-Colonel Julian Smith[39] would hesitate to use blood more than three days old, especially when it is not collected under the best conditions. He writes that before a battle Lieutenant-Colonel Ian Wood, who was responsible for the resuscitation of the wounded, collected blood in a bank from Group II and Group IV donors. He replenished this store from time to time from walking wounded. Smith favours the use of this method in the field; he calls it a "minor blood bank". Blood from a bank should, according to Blalock,[3] not be warmed; it should be given cold and given slowly. Warming of blood, he writes, was advocated before the significance of pyrogens was understood. The use of blood banks in the field, to judge from experience in Spain, was greatest in the therapy of shock when the blood banks were used in conjunction with base hospitals (which was possible in Spain). The facilities of a base hospital permit of collection and storage of blood with proper precautions.

The Use of Whole Blood.—For obvious reasons there can be little doubt that whole blood, administered by expert hands, is better than citrated or stored blood. It is, of course, the ideal fluid for transfusion. Julian Smith, senior, has revised and redesigned a method for whole blood transfusion, which he has demonstrated to be simple and safe.[40] It has, however, the disadvantages that all arm-to-arm methods have in field use. In some large German clinics whole blood is administered with apparatus made of an amber-like substance, as simply as citrated blood can be administered with a tube and funnel—and it is not an arm-to-arm method. The objections to the use of whole blood in total war are that it presents technical difficulties to the rank and file, that clotting (negligible in expert hands) is likely to occur, and that its use is not applicable for the mass transfusions often necessary. However, I feel sure that in the future specially trained teams will come to use it in base hospitals for casualties desperately ill with shock, and that it can only be a question of time before the mechanical difficulties associated with the use in forward areas of this or some improved method of whole blood transfusion will be overcome by fertile brains.

The Use of Serum or Plasma in Blood Loss.—In cases of hæmogenic shock from severe blood loss, blood may not be immediately or even eventually available. Here plasma or serum can be used. The rationale for its use in such cases is, according to Blalock,[3] as follows. So long as the plasma volume is not greatly reduced, a wounded man, who has lost a great number of red corpuscles as a result of a severe hæmorrhage, may remain in a reasonably good condition. Thus if red corpuscles are lost by hæmorrhage and the plasma loss is made good, the patient recovers quickly; the loss of red corpuscles is well tolerated if the plasma is replaced. As the dropping of the blood pressure usually causes a retardation or even a cessation of hæmorrhage, patients do not, as a rule, lose more than three or four pints of whole blood. This leaves three-quarters of the red corpuscles in the blood vessels. If an adequate quantity of plasma is introduced, the red corpuscles are more than adequate to maintain life. The plasma protein will then provide the necessary osmotic pressure to keep the fluid in the vessels, provided that it is given early and that the capillary damage is not too extensive.

Shock from Plasma Loss.—In hæmogenic shock the loss of blood volume is more often than not due almost entirely to the loss of plasma. This is the case in the shock that follows severe and extensive burns or crush injuries. Here hæmoconcentration occurs, and plasma or serum is the ideal replacing fluid. In this case, as in that of blood loss, shock therapy will fail unless the whole amount of plasma lost is made good; amounts of plasma or serum adequate to make up the initial blood volume must be given. The following table for guidance in this respect has been compiled by Black.[2] (See Table I.) When laboratory facilities are available, the amount of

TABLE I. (*After* Black.)

Hæmoglobin Percentage. (Haldane.)	Blood Volume. (Litres.)	Plasma Volume. (Litres.)	Estimated Deficit in Plasma Volume. (Cubic Centimetres.)
100	5·0	3·0	—
105	4·75	2·75	250
110	4·55	2·55	450
115	4·35	2·35	650
120	4·15	2·15	850
125	4·0	2·0	1,000
130	3·85	1·85	1,150
135	3·7	1·7	1,300
140	3·55	1·55	1,450
145	3·45	1·45	1,550
150	3·35	1·35	1,650

plasma or serum which should be administered can be accurately computed. This amount is arrived at by estimation of the specific gravity of the plasma by means of a modification of the falling drop method of Hamilton and Barbour,[20] and by determination of the corpuscular volume with a hæmatocrit (Scudder[37]). Both these methods are moderately simple. In the falling drop method a drop of the patient's plasma is allowed to fall in a fluid of known specific gravity, with which the drop is immiscible. From the time it takes to travel between two points the specific gravity of the plasma can be calculated. The hæmatocrit is a specially graduated tube, in which the patient's blood is centrifuged for a specified time, after which the corpuscular volume is read off. How practicable these exact methods are depends on circumstances. It must be remembered that in total war a great majority of subjects of shock are civilian, and these are usually cared for in properly equipped hospitals with laboratory facilities. In the average case of shock following extensive burns, Black[2] points out that it will usually be found that indications based on hæmoglobin readings are that a pint of serum or plasma should be given before the burns are cleaned up, and that after they have been cleaned and dressed as much as two or three pints may have to be administered. These amounts,

he states, should be given with a cannula and at a speed of 100 drops per minute.

The Merits of Plasma and of Blood Serum.—Plasma is obtained from blood which has been prevented from clotting by the use of sodium citrate. Serum is the fluid part of blood that has been allowed to clot. Plasma contains fibrinogen and sodium citrate. Serum contains neither. The general opinion of various observers seems to be that plasma causes less reaction than serum. The high potassium content of serum and the presence of substances thought to be formed in the process of the clotting of the blood are regarded as factors in causing reactions. The advantages of both plasma and serum are that they are easily preserved, transported and administered, that they can be on hand for immediate use, that typing is not required, and that they do not add to the corpuscular concentration of the blood. The use of Hartman's dried plasma[129] contained in "Cellophane" bags would, if its use became practicable, simplify the use of plasma in the field. When these bags are placed in water the plasma soaks up through the "Cellophane" enough water to put it into solution ready for administration to the patient. When sterile distilled water is unobtainable, the "Cellophane" bag, the wall of which is impermeable to bacteria, can be placed in ordinary tap-water—a great advantage when it is to be used in adverse circumstances.

The Use of Glucose and Saline Solution in Hæmogenic Shock.—In the early stages of shock, as has been pointed out, isotonic saline and glucose solution has a distinct value. The glucose, especially if it is combined with "Neo-synephrin" ("Sympatol") has, acting through the coronary circulation, a good action on the heart, and helps this organ to sustain a compensatory action to keep up a blood pressure that is falling because of a decreasing blood volume; the water counteracts any dehydration, which may have led to loss of blood volume and shock; and the glucose has a caloric value and protects the liver. There is little evidence, however, to show that in existing hæmogenic shock the intravenous administration of crystalloids (of glucose and saline solution) will permanently increase the blood volume or that it will have more than a temporary effect. Wilson[44] points out that, on the other hand, there is much evidence that the extensive use of these infusions for the seriously wounded may increase rather than decrease shock, and that it can be shown that in the treatment of severe hæmogenic shock with glucose and saline solution the plasma protein content may decrease and the concentration of the red corpuscles even increase. He states that the reason for this is that these crystalloids are lost so quickly into the tissues to form a tissue œdema that they take with them through the damaged capillaries some of the plasma. Thus in the shock following plasma loss in the case of severe burns, glucose and saline solution should not be given intravenously, because the lowering of osmotic pressure that these crystalloids could produce might be serious. "A protein containing fluid has been lost and protein containing fluid should be replaced." (Blalock.[62])

The Use of Drugs in the Treatment of Shock.—In neurogenic shock, in which vasodilatation is present, the use of vasoconstrictor drugs is indicated. But in hæmogenic shock, in which compensatory vasoconstriction is present, vasoconstrictor drugs are of little, if any, value. Any elevation of blood pressure that they may bring about results only from an increase of resistance at the tips of the arterial tree. Thus to quote again from Blalock:[31]

> Damming the blood in the arterial portion of the circulatory system at a time when the organism is suffering from a diminished quantity of blood does not improve the volume-flow in the capillaries. High arterial pressure is not so much the aim in the treatment of shock as a higher pressure which transmits an increased blood-flow through the capillaries all over the body.

Adrenaline is of little use; shock can even be produced by the use of this drug. Dodd[130] finds that "Coramine" has no effect whatever on the blood pressure, nor is it of any other benefit in shock. Wood[47] has used "Neo-synephrin" with good effect in shock. He uses it in conjunction with the intravenous drip administration of large amounts of glucose and saline solution and with blood transfusions. "Veritol", because one of its actions is to empty the blood depots (the spleen and the liver), is one of the most satisfactory drugs for raising the blood pressure. The intramuscular dose is 0·75 to 1·0 cubic centimetre; the rise begins in three to five minutes and reaches its maximum in about twenty minutes; the effect lasts for twenty to forty minutes, after which the dose should be repeated. The intravenous dose is 0·25 cubic centimetre; the rise is instantaneous and the effect lasts for twenty to twenty-five minutes. The combined administration of 0·75 cubic centimetre deep into the shoulder muscles and 0·25 cubic centimetre intravenously gives an immediate pressure rise, which is maintained for thirty to forty-five minutes. Devine (1939)[131] has also used "Veritol" in shock. In a small series of cases only two out of ten consecutive patients failed to respond to its administration with a rise of blood pressure of over 20 millimetres of mercury. "A combination of 'Cardiazol' and 'Veritol' is good therapy in shock." (Dodd.[130])

The Use of Oxygen in Shock.—Oxygen therapy is of particular value in the management of shock (Chase[120]). In shock there is a stagnant anoxæmia—that is, the blood becomes deficient in oxygen. As a result of this the tissue cells cannot obtain sufficient oxygen and a tissue asphyxia occurs. This causes further damage and permeability to the capillaries. To counteract this tissue asphyxia the oxygen tension in the alveoli (the oxygen head-of-pressure) must be greatly increased, so that the concentration of oxygen in the smaller blood volume will be raised and an adequate percentage of oxygen will be placed at the disposal of the plasma and therefore of the tissue cells. The concentration of oxygen must therefore be high—from 90% to 100%. This head-of-pressure of oxygen can be obtained only by a close-fitting mask—a "B.L.B." mask, a Boothby mask, or the mask from a nitrous oxide and oxygen anæsthetic apparatus. These masks will deliver any concentration up to 100% of oxygen. A funnel and nasal tube can deliver only from 40% to 50% of oxygen, and this concentration is of course valueless in shock. Actually in casualty clearing stations and field hospitals the use of oxygen in shock is attended with difficulties; the large cylinders are cumbersome, and the large amount of oxygen and continual attention required for the treatment of a number of patients are not always forthcoming.

The Use of Adrenal Cortical Extract.—The use of adrenal cortical extract in the treatment of shock is based on the fact that in hæmogenic shock there is an insufficiency of function of the cortical part of the adrenal gland. The administration of this substance is still in the experimental stage, but so far it seems to offer great promise (Harkins[122]). Natural extracts are preferable to the synthetic compound (desoxycorticosterone acetate). Wilson's[45] observations in the treatment of hæmogenic shock following burns lead him to believe that adrenal cortical extract has a considerable value when used as an adjuvant to the administration of plasma. He thinks that, probably owing to its action on the damaged capillaries, it brings about blood changes, which decrease the hæmoconcentration and limit the duration of the shock. Enteral or parenteral administration of sodium chloride as an adjuvant to the administration of adrenal cortical extract has a place in the treatment of shock (Lowdon, McKail, Rae, Stewart and Wilson[125]).

Association of Shock with Renal Changes.

This survey of the recent literature of shock would be incomplete without further and fuller mention of those renal changes which are found associated with, and veiled by, the more or less severe hæmogenic shock which follows crush injuries. Much of what is known about this association and the nature of these renal changes has emerged from the study of the large number of cases of severe "crush injuries" that occurred when London was bombed.[49]

There occur, after most severe traumata—or even after a surgical operation—some manifestations of renal changes, which Bywaters[49] would regard as being due to functional

renal impairment. These comprise oliguria, accompanied by a trace of albumin and hyaline casts in the urine and perhaps by a rise in the blood urea level. It is not unreasonable to regard this renal impairment as being partly the result of the circulatory conditions particular to shock; for, according to Bywaters, it could be caused by a decreased glomerular pressure from low systolic blood pressure and decreased blood volume, as well as by an increased protein breakdown and by a decreased renal reserve in elderly people.

But with regard to persons pinned for hours under the débris of bombed houses, careful investigation has shown that the state of hæmogenic shock following injuries in these circumstances may merge into a syndrome of fatal renal failure, the basis of which is a set of organic renal changes. Bywaters describes a typical case as follows:

> The patient who has a history of being buried for several hours with masonry resting across a limb, will be shocked on admission or soon after, with a fall in blood pressure following a preliminary period of apparent well-being. During this initial phase, hæmoconcentration occurs (and compensatory vasoconstriction) from loss of plasma into the injured part, which becomes swollen and hard. There is also loss of sensation and power and the skin shows whealing and, later, blisters: arterial pulsation distally may be impaired. After restoration of blood volume by transfusion of blood or serum, the patient recovers, but it is noticed that the urine is blood-stained and contains albumin and pigmented granular casts. In the next few days the urinary output decreases and becomes clearer: the blood pressure rises to a high level: there is a progressive increase of blood urea, phosphate and potassium, and a decrease in alkali reserve. The patient becomes alternatively drowsy and apprehensive: death occurs suddenly about the seventh day, and is occasionally preceded by abnormalities of cardiac action similar to those produced experimentally by potassium intoxication.

Sometimes, he writes, these patients give little evidence of shock. They are, however, suffering from shock, though they may show no pallor or sweating or fall of blood pressure; hæmoglobin values and hæmatocrit readings show that they may have lost over a litre of plasma into the tissues, even though they have suffered from no external hæmorrhage, and from no more œdema than that occupying a few square inches. These patients may go through all the treatment for shock without the serious structural renal changes being suspected.

Products from dead and dying muscle are regarded as the main causal factors of this renal damage. Professor Winton and his colleagues have shown that the organic changes arising as a result of these toxic products are a poisoning of and damage to tubule cells, and a blocking of tubules as the result of precipitation of myo-hæmoglobin casts, and these are the main pathological features. As far as can be ascertained the kidneys become damaged only when the circulation through the crushed limb is reestablished—that is, after the limb has been released; this is an observation which has an important bearing on treatment.

The syndrome was thought to be a recent discovery, but, as Bywaters[69] has pointed out, it was recognized during the last war, it has been seen following earthquakes, and it does occur in civil practice following mining accidents.

Treatment.

It has been necessary to consider the association of renal damage with shock because of the impression that this damage is secondary to the circulatory conditions of shock, and that as the shock decreases with the restoration of blood volume the renal conditions should clear up. Close observation, however, has shown that they do not. Indeed, it has been found that if the depleted circulation is too rapidly restored, renal failure may actually be hastened.

In the treatment of these patients, the renal damage must be recognized in its early stages; but this is difficult to do, because its early manifestations are indistinguishable from a functional renal impairment caused by a state of shock. McMichael[69] thinks that in that type of "crush injury" in which renal damage is likely to occur, the patients should be treated from the outset as if they had incurred renal damage; for if two or three days are allowed to elapse to see whether the kidney is damaged or not, any treatment is too late.

In regard to the treatment of the condition, McMichael points out that rescue parties should be instructed that the real danger to people pinned under masonry with crushed limbs is that of renal failure, and that before the patient is released, (*a*) he should be given abundant warm drinks (this ensures a good flow of urine, dilutes the chemical poisons within the kidney tubules and prevents the precipitation of myo-hæmoglobin casts), and (*b*) he should have a tourniquet applied to the proximal part of the limb (this restricts the entry into the circulation of the toxic products). When the patient arrives at hospital, McMichael recommends (*a*) that the tourniquet should be replaced by a sphygmomanometer cuff, which is deflated slowly (to prevent a sudden flooding of the circulation with toxic products from muscle degeneration); (*b*) that the restoration of the circulation by transfusion should be controlled; (*c*) that no attempt should be made to warm the limb or limbs, which should, in fact, be kept cold with ice packs (the cold slows the circulation and decreases the rate of tissue autolysis); and (*d*) that alkalinization of the urine should be brought about by the administration of sodium bicarbonate and sodium citrate, and diuresis should be induced by the use of diuretics.

The surgical therapy that has been practised on these patients does not seem to have had much success. Tension of the limb tissue has been relieved by multiple incisions in the deep fascia. The limb has been promptly amputated with a view to removal of the source of the autolytic products. No definite success, however, seems to have attended these measures.

Summary.

In this survey of recent work on shock the following points are worthy of emphasis:

1. Shock is a complex of acute circulatory disturbances.

2. The initiating factors of these disturbances are toxic substances shed from the cells of injured tissue.

3. The toxic substances exert their action on the "vascular bed" (the capillaries) and so damage the capillary walls that they become porous, and thus allow plasma to leak into the tissues, cause loss of blood volume and start the chain of circulatory changes which we know as shock.

4. Loss of blood can bring about the same changes and the same condition of shock.

5. The actual onset of shock must be gauged by clinical intuition.

6. One of the best treatments of shock is to try to prevent it.

7. Shock requires prompt treatment—the earlier the treatment, the more successful.

8. The "backbone" of shock treatment is adequate replacement of the lost protein-containing fluid by a protein-containing fluid—blood, plasma, serum (in this order of value). A persisting loss must be persistently made good.

9. In shock from hæmorrhage, if blood is not available, plasma or serum, if given in adequate quantities, is nearly as good.

10. When laboratory facilities are available, methods that enable the exact volume loss to be computed are valuable in severe cases of shock, in which large quantities of blood or serum have to be given.

11. Saline and glucose solution has its uses and (as it is very often used) its dangers.

12. The value of drugs also is limited. Drugs that seem to be of value are "Cardiazol", "Veritol" and "Sympatol" or "Neo-synephrin".

13. When patients suffer from hæmogenic shock following crush injuries sustained from falling masonry, the question of structural renal damage should always be considered.

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Notes on Books, Current Journals and New Appliances.

A NOVEL IN PRAISE OF GOODNESS.

DR. A. J. CRONIN, whose novel "The Citadel" became a "best seller", has now published "The Keys of the Kingdom", a work best described as being in praise of goodness.[1] It is the story of Francis Chisholm, a Scotch boy who became a priest in the Church of Rome. He lives a life, simple and transparently honest, putting into practice what he preaches; he manages to combine saintliness and common sense. To himself he always appears as a failure; he appears so to many of his fellows and superiors, who by way of contrast are depicted as paying far too much attention to appearances. There is only one man, a bishop, who understands Father Chisholm and he opens the door to Chisholm's life work in China. But the tale must be read. It will hold the attention, and when the reader puts the book down, having reached the end, he will probably ask himself, "What is success?" and "What kind of success do I want in my own life?". Chisholm taught that toleration is the highest virtue and humility comes next. But he is no milksop; he is a man with moral courage and indomitable faith. He meets trials, difficulties and dangers as only a man so endowed could meet them. All lovers of a good novel will be grateful to Dr. Cronin.

[1] "The Keys of the Kingdom", by A. J. Cronin; 1942. Sydney: Angus and Robertson Limited. Crown 8vo, pp. 398. Price: 10s. 6d. net.

The Medical Journal of Australia

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THE HEALTH OF GREAT BRITAIN.

To all those interested in public health and preventive medicine the publication of the annual report of the Ministry of Health of Great Britain has always provided material for study and generally a stimulus to effort. In the upheaval of war conditions are so altered that disease may easily become more virulent and more widespread. In these circumstances the public health expert has an opportunity to test not only the efficiency of his organization and the efficacy of measures advocated by him, but also his ability to adapt himself to change and to persuade the people whom he serves to do the same. More than this, since health is a matter of mind as well as of body, the estimation of the health of a community gives evidence of the ability of the people to stand up to the knocks that are inseparable from a total war, to endure, if need be, hardship, deprivation and suffering, and to carry to a successful issue campaigns directed at the enemy's stronghold. For all these reasons the recently issued summary of the report by the Ministry of Health for the period from April 1, 1939, to March 31, 1941, cannot be passed by without notice. The report was not presented to Parliament until February, 1942, but in spite of this delay there is much in it from which we can derive interest and profit. The report covers the unusually long period of two years, and the greatest encouragement may be taken from the simple statement in the introductory letter by the Minister of Health, bearing the date February, 1942, that in the third winter of the war "the health of the people remains good".

Some important statements are made in regard to the communicable diseases. There has been a sharp rise in the incidence of cerebro-spinal fever; but though the number of cases in the period under review was higher than any yet recorded, the fatality rate was the lowest so far known. Readers are reminded that in his report for 1938 the Chief Medical Officer drew attention to the increasing number of infections of the disease and stated that the possible approach of another epidemic could not be disregarded. His warning was justified. In 1938 the number of cases notified was 1,288; in 1939 the number was 1,500; in 1940 it was 12,771. In 1940 the number of deaths was 2,584. Though the number of cases of typhoid and paratyphoid fever had until 1940 been unprecedentedly low, the incidence rose during that year, the milder type of paratyphoid fever being mainly responsible. No case of typhoid fever was attributable to the pollution of water by enemy action, but it is pointed out that extensive air raid damage to water systems may at any time produce conditions which call temporarily for extra precautions. For this reason, in December, 1940, local authorities were given formal permission to offer the public free immunization against organisms of the typhoid group if the medical officer of health so advised. There has been an increase in the number of deaths from respiratory tuberculosis. The crude death rate per million of population for 1939 was 535 and for 1940 it was 571; in this calculation the population was regarded as being the same for the two years. The increase in respiratory tuberculosis has been most noticeable among young women between the ages of fifteen and twenty-five years. As a matter of fact, the tuberculosis figures in general represent "a check in the downward trend of mortality which had been so satisfactorily resumed in 1938 after a slight pause in 1937". It is pointed out (and Australian authorities would do well to note) that the conditions of this war have combined to put new obstacles in the way of the fight against tuberculosis. Restriction of building activities have held up schemes for the expansion of accommodation; treatment facilities in reception areas have had to be expanded and adapted to provide for unusual numbers of patients; dispensary treatment has been interrupted or continued only with difficulty in districts subjected to air raids; there has been an acute shortage of nurses in sanatoria. Another important obstacle has to do with crowded conditions of living and the difficulties of maintaining desirable standards of environment. Emphasis is also laid on a fact all too often forgotten, that some of the onus of combating risks of the spread of tuberculosis must be borne by the individual. Two particular points are specified—the recognition by the public of the importance of drinking only pasteurized milk, or boiled milk if pasteurized milk is not available, and the spread of disease by droplet infection. The common experience that an increase in venereal disease is one of the effects of war is being exemplified, though for some reason not explained the incidence is still substantially lower than it was in 1934. To combat the increase, closer cooperation has been encouraged between the treatment services of local authorities and the fighting forces, and the local authorities have been urged to expand facilities for treatment wherever necessary and have been promised an exchequer grant of 75% of both capital and running costs of new provisions to meet war-time needs. Out-patient and in-patient treatment has been made available for members of the forces, not only at hospitals within the Emergency Hospital Scheme, but also at civilian centres if they are referred to these centres by the appropriate service authorities. Lastly, local authorities have arranged

for suitably qualified medical practitioners in rural areas to give treatment at their surgeries during normal attendance hours.

The section of the report dealing with mothers and children shows that, although two years of war have dislocated family life and all concerned with maternal and child welfare services have been forced to concentrate on maintenance rather than development, progress has still been made. We read that the fall in the maternal mortality rate which began in 1934 has continued; the figure of 2·61 per thousand total births for 1940 is the lowest that has been recorded. Among the factors regarded as chiefly responsible for the decline is the advance made during recent years in the treatment of sepsis; but some credit is also stated to be due to the improved standard of domiciliary midwifery, and a tribute is paid to the devotion to duty that has been shown by practising midwives. When the intensive bombing of London began it was realized that persons in charge of air raid shelters might have to deal with women suddenly in labour and have no experience to guide them. Two leaflets of simple instructions were issued, the main object of which was to give advice on the care of mother and child if no expert help could be obtained in time, and to prevent untrained people from interfering more than was absolutely necessary. Though the fall in infantile mortality has not progressed, the position is far from discouraging. In 1939 the mortality rate had fallen to 50 per thousand live births (the figure was 53 in 1938); the rate rose in 1940 to 56 per thousand. That great strides have been made in maternal and child welfare is shown by the fact that in the second year of the war of 1914-1918 the infant mortality rate was 110 per thousand. The National Milk Scheme which was introduced in June, 1940, has made it possible for every expectant or nursing mother and every child under the age of five years to obtain every day a pint of liquid milk for the sum of twopence or if necessary free of cost. "The result has been a vast increase in the consumption of milk by the classes who need it most." It has been calculated that 84% of the eligible population of England and Wales get milk cheaply or free of cost and that 25% of these beneficiaries are in the latter category. Mention is made of the welfare of young children—those evacuated from dangerous areas and those who have remained behind. A great deal has been done for these children by health visitors and others, and medical inspection has also been undertaken. This subject was discussed a few months ago in these columns at considerable length. It is pointed out that the problem will have to be solved on a permanent basis. No matter how much conditions are altered and how careful the supervision, there can be no permanent solution without the cooperation of the parents. In the future "more time and effort must be devoted to instructing young mothers in such important, if elementary, matters as the necessity for cleanliness and for training infants and toddlers in good habits". This cannot be done until peace "affords relief from more urgent work". By the end of March, 1941, 61 nursery centres had been established in reception areas, where children between the ages of two and five years could be cared for and given occupation during school hours. This has provided much relief for householders on whom the children have been billeted. The care of the children of women workers has not been neglected. In districts where the Ministry of Labour and National Service advised that there was a special need, welfare authorities were asked to establish day nurseries for children up to five years of age. At first this was not a particularly urgent matter, but towards the end of 1941 the demands on woman power began to develop rapidly and urgent steps had to be taken to meet the needs of children whose mothers sought employment. Approved expenditure on all nurseries, for evacuated children and for the children of women in employment, were accepted as a charge on the exchequer and the Government made itself responsible for the bulk of the necessary equipment. By December 31, 1941, there were operating in England and Wales 93 whole-time and 130 part-time day nurseries; 245 whole-time and 68 part-time nurseries were approved but not yet in operation, and 267 were in preparation.

In the foregoing only the two first, but perhaps the more obviously important, sections of the report have been described. Those that remain deal with such subjects as the supply of nurses, housing, town and country planning, national health insurance and contributory pensions, war emergency organization and the emergency services. These cannot be considered at present. Much of the work mentioned in this report covers ground usually traversed by these reports in normal times; but it is clear that in many directions work had to be intensified and extended; in other spheres entirely new undertakings had to be established and put into working order. The Minister admits that mistakes have been made, and this in such a colossal task can easily be understood. His claim that much has been done will be freely admitted. For this many persons have been responsible—public servants, voluntary organizations and so on. But the Minister's final tribute must be mentioned. He writes that in operations which have affected in one way or another every district and almost every householder, success has ultimately depended on the cooperation and goodwill of the people generally. "Their kindliness, tolerance, and practical efficiency have been beyond praise."

Current Comment.

OXYGEN THERAPY.

THERE is no need these days to stress the value of oxygen in the treatment of disease, but there is still very real need to stress the increased value of its early administration in certain circumstances, as is done by R. M. Tovell and J. E. Remlinger, junior, in a recent discussion of oxygen therapy and resuscitation.[1]

Oxygen deficiency, anoxæmia as it is usually called or hypooxæmia as a recent writer has more correctly called it, is of four types. The anæmic type is due to a deficiency or functional alteration of the hæmoglobin. The anoxic type is due to a deficiency of oxygen in the atmosphere or inadequate absorption by the body. The stagnant type results from circulatory failure as in cardiac failure or surgical shock. If the cells of the body become damaged and cannot properly use oxygen, histotoxic anoxæmia results. Examples of this are found in poisoning by cyanide or alcohol.

[1] *The Journal of the American Medical Association*, December 6, 1941.

There are many diseases in which oxygen is of real value. Pneumonia is perhaps the commonest and most important, and it is here that emphasis on its early use is of most importance. The vital capacity is reduced, diffusion through the lungs is diminished and sometimes there is added the factor of circulatory failure. To make matters worse, fever and toxæmia increase the metabolic rate and so the need for oxygen. The danger of anoxæmia in pneumonia cannot be stressed too much. C. A. Binger has found a close correlation between oxygen deficiency and mortality rate. Cyanosis, it must be emphasized, is not the first sign that more of this precious element is needed. Cyanosis does not appear indeed until the oxygen saturation of the blood has fallen at least 10% to 15%. It is particularly difficult to detect cyanosis in anæmic patients, and many patients with pneumonia are anæmic. This is particularly true in these days of almost universal sulphapyridine therapy, for perhaps the most common serious toxic effect of this drug is a depression of the level of circulating red blood cells. The signs for which the physician must be ever on the alert in his patients with pneumonia are a pulse rate out of proportion to the temperature, rapid shallow respiration and a greyish colour. When these appear oxygen is essential treatment.

Several cardiac diseases are benefited by oxygen. In congestive cardiac failure there is a defective circulation and a tendency to impairment of pulmonary efficiency because of œdema. In cardiac failure secondary to chronic lung disease these same two factors apply. In coronary occlusion and coronary sclerosis life may be saved and pain relieved by the gas. Asthma presents a rather different problem. Bronchiolar obstruction prevents the ready passage of air into the lungs and oxygen alone is of limited value. There is, however, in helium a gas that flows with remarkable ease through a small airway and a mixture of oxygen and helium is of distinctly more benefit than oxygen alone or a mixture of oxygen and air. The use of this gas in respiratory obstruction has been discussed before in these columns. Unfortunately its expense limits the extent of its use. When shock supervenes after major surgical operations anoxæmia is a factor of grave significance. Other indications for oxygen therapy have been suggested by surgeons, for example, in intestinal distention and sometimes after encephalography. Gas poisoning presents a further field for the use of oxygen. Again in resuscitation of patients who for various reasons have ceased to breathe, oxygen is of value and the addition of carbon dioxide often a benefit; in *asphyxia neonatorum* oxygen may be of the greatest value.

The concentration of oxygen that should be administered is an important matter. If breathed pure by animals for several days damage to the lungs results, and in man untoward symptoms have been reported after as short a time as six hours. It seems certain that pure oxygen should not be given continuously for longer than this time. Most methods of administration fortunately do not cause the patient to breathe pure oxygen. The common method of delivering the gas by a nasal catheter is of very real value despite whatever may be said or written to the contrary. It is probably the method of choice for children. A well-made tent is good. If efficient an oxygen concentration of about 60% can be readily maintained, but is a wasteful method. The oxygen chamber is very efficient and provides the most comfortable of all methods, but is very expensive and creates a very real fire risk. Administration by a face mask may cause the patient to breathe almost pure oxygen. In some types of mask there is no valve to prevent oxygen being blown out during expiration. These are very wasteful, but other types are economical and effective.

Tovell and Remlinger make little mention of the use of carbon dioxide in conjunction with oxygen, and it is quite true that this is often used when it is unnecessary. Certainly carbon dioxide is the most effective stimulant of the respiratory centre available, but in almost all of the conditions discussed above the carbon dioxide saturation of the blood is already much higher than normal even though the patient's respiration may be feeble or have ceased altogether. The reason for this interference with breathing is not a deficiency of carbon dioxide, but depression of the respiratory centre by the severe anoxæmia. Brain tissue does not need much oxygen, but what it needs it needs badly. One disease in which it is sometimes of value to administer a mixture of the two gases is pneumonia, for here respiration is often shallow and parts of the lung poorly expanded. Henderson has shown that if collapse of these parts of the lung occurs, spread of the pneumonic process to them is very likely to occur. As the efficiency of the respiratory centre improves under the influence of adequate oxygen supply and as accumulated carbon dioxide is steadily washed out through the lungs, the administration of a small concentration of this gas in the inspired oxygen ensures that a satisfactory depth of respiration is maintained. This may be of particular importance if morphine has been given. Morphine is a powerful depressant of the respiratory centre, but there are few who would withhold it from the patient with pneumonia who is distressed and in pain. Often it will bring the rest and sleep that save life, and will do no harm whatever if oxygen and carbon dioxide are administered at the same time.

BASAL METABOLISM AFTER FIFTY YEARS.

"Now King David was old and stricken in years; and they covered him with clothes but he gat no heat." Here we have from the Old Testament an illustration of the lowered basal metabolism that characterizes the senile state. The cold hand of the old man contrasted with the warm hand of healthy youth is known to us all. In those regions where snow occurs in winter a fall is greeted by childhood with rejoicing, but old age dreads the impending misery of chilled extremities. Goldsmith had planned a time of "blest retirement" when he could "husband out life's taper to the close and keep the flame from wasting by repose"; in other words he looked forward, and not with anticipatory regret, to the day when his metabolism would be largely basal.

The veteran Adolf Magnus-Levy, of New Haven, Connecticut, has had the rare opportunity of contrasting his basal metabolism at the age of 26 with that at the age of 76.[1] Half a century of vigorous life separated these estimations and we can congratulate Dr. Magnus-Levy on the fact that the promise of an athletic youth should have been fulfilled by an old age which is frosty but kindly.

Dr. Magnus-Levy's revered teacher under whose guidance he studied metabolic technique, Professor Nathan Zuntz, also compared his basal metabolism at 41 with that at 70. The figures for decline of body weight, of oxygen intake and of Calories expended per square metre per hour show marked agreement. Briefly Dr. Magnus-Levy's results are as follows. After fifty years, from the age of 26 to 76, the height fell from 167 centimetres to 165 centimetres; the two centimetres difference we imagine is chiefly due to the intervertebral disks. The weight was reduced from 67·5 kilograms to 60 kilograms, and once more we can congratulate the veteran scientist on his physical fitness. The decline in oxygen intake measured in cubic centimetres per minute was from 231·3 to 176·0; that of carbon dioxide output from 192·5 to 158·4 measured in the same way. The respiratory quotient rose from 0·83 to 0·9. This could easily be due to the preponderance in the diet of old age of easily digested carbohydrate. The Calories expended per square metre per hour fell from 38·1 to 31·5; that is to say there was a decrease of 17%. The figures given by Dr. Magnus-Levy are not startling and may indeed be accepted as typical of a man in the full enjoyment of robust health. They give us, however, a precise measure of the lowering of the flame of life as age creeps on. May we express the hope that we have not heard the last of the basal metabolism of this doyen amongst American physiologists?

[1] *The Journal of the American Medical Association*, April, 1942.

Abstracts from Medical Literature.

GYNÆCOLOGY.

Total or Subtotal Hysterectomy in Benign Conditions of the Uterus.

RICHARD E. AHLQUIST (*The Western Journal of Surgery, Obstetrics and Gynecology*, February, 1942) discusses the question whether subtotal or total abdominal hysterectomy should be performed in benign conditions of the uterus. The conditions to which he refers are fibromyomata, adenomyosis or endometriosis and chronic pelvic inflammatory disease. Although previously he favoured subtotal hysterectomy, experience has caused him to change his opinion; patients frequently suffered from leucorrhœa after operation, and treatment, including the removal of the stump, became necessary. Moreover, residual infection and degenerative changes appeared in the cervix, and not infrequently cancer developed in the stump. The author states that it is exceptional to find a normal cervix in conjunction with indications for hysterectomy, and total hysterectomy avoids the danger of leaving a diseased cervix, an unsuspected cancer of the cervix or a cervix in which cancer will subsequently develop. He considers that if total hysterectomy is properly performed, a shortening of the vaginal canal or prolapse of the vaginal vault will not occur. Associated laceration of the perineum should be repaired at the time, or soon afterwards. The author quotes a series of 511 consecutive abdominal hysterectomies performed by different surgeons at one hospital from 1930 to 1940 inclusive; 221 were subtotal and 290 total hysterectomies. There were five deaths after subtotal hysterectomy and 10 deaths after total hysterectomy; seven of the 15 deaths were due to pulmonary embolism. Pathological examination revealed 13 unsuspected malignant growths. The author has found that the post-operative management of the patient that he now uses has greatly lessened the incidence of pulmonary embolism; he gives details of the treatment. He concludes that total abdominal hysterectomy can be performed as safely as subtotal hysterectomy, with a lower morbidity rate.

Diverticulum of the Female Urethra.

MAURICE RASHBAUM and GABRIEL P. SELEY (*New York State Journal of Medicine*, February 1, 1942) discuss diverticulum of the female urethra and report a case. Such diverticula are rare; most authors consider them to be invariably acquired, though some think a congenital origin possible. The chief causes are injury during parturition and dilatation of the urethra above a stricture or stone. The diverticula are of two extreme types, one wide open into the urethra and the other with a narrow or slit-like opening. The symptoms may include any or all of those usually associated with lesions of the lower part of the urinary tract. A cystic swelling in the region of the urethra should suggest a urethral diverticulum; palpation confirms the cystic nature of the swelling, and at times pressure causes a discharge of turbid urine from the urethral orifice followed by disappearance of the mass. The diagnosis is easily verified by X-ray examination. The authors consider operation the only treatment to be recommended. Before operation, special measures are taken to control the urinary infection. With regard to operative technique, they hold that if the diverticulum is suspected of containing a calculus, it should be opened first and the calculus removed before the sac is excised. If invagination of the thinned-out sac followed by a fascia-lapping procedure is practised, there is a danger that the infolded redundant sac will obstruct the urethra. Young reported success with simple incision of the sac followed by carbolization. The authors stress the necessity for an indwelling catheter after operation; it should be connected to an apparatus for continuous bladder drainage and irrigation. The authors' patient was a *multipara*, aged thirty-nine years, who for four years, since the birth of her last child, had suffered from constant dribbling of urine and from burning on micturition. Nephrectomy had been performed for calculous disease of the left kidney, but her symptoms were not relieved. A urethral diverticulum was found to be present, and an operation was performed; the sac was opened for a distance of two centimetres, the walls were invaginated and the anterior vaginal wall was repaired. The condition of the patient was worse than before operation. Two months later she was readmitted to hospital, and examination revealed a swelling in the mid-line of the anterior vaginal wall and distal to this lesion a puckered scar from the previous operation. After suitable pre-operative treatment with a 10% solution of argyrol, the diverticulum was excised, the anterior vaginal wall was repaired and the patient ultimately made a complete recovery. The authors stress the need for complete mobilization of the urethra and urethro-vesical junction without tension on the suture line. Continuous bladder drainage and irrigation after operation prevent contamination of the suture line. Complete excision of the diverticulum should be performed before any repair is attempted.

Primary Carcinoma of the Fallopian Tube.

J. O. BAKER and ARISTIDE BLAIS (*The Canadian Medical Association Journal*, January, 1942) add two more to the total number of cases of carcinoma of the Fallopian tube reported up to February 9, 1939. Their first patient, aged forty years, was admitted to hospital in June, 1927, because of pain in the right lower quadrant of the abdomen of three days' duration, slightly relieved when she lay down; a previous attack had occurred several months earlier. Conservative measures gave no relief of the pain and the patient's temperature rose to 102·2° F., so operation was undertaken. Both Fallopian tubes and ovaries were removed. Pathological examination revealed primary carcinoma of the Fallopian tube superimposed on old tuberculous salpingitis. The second patient, aged forty-seven years, was admitted to hospital in August, 1936. Her condition was characterized chiefly by swelling of the abdomen, with associated discomfort; her waist measured 45 inches. Measures to reduce the ascites gave only temporary relief, so operation was undertaken in September, 1936. The chief operative finding was a mass in the left lower quadrant of the abdomen involving the left Fallopian tube; the tube was much enlarged, and the fimbriated end, which was friable and resembled placental tissue, was adherent to the parietal peritoneum. The tube and some parietal peritoneum were removed; the right tube, the liver, the gall-bladder and the stomach were apparently normal. X-ray therapy was given. Following the pathologist's report that the tumour was an adenocarcinoma of the Fallopian tube, grade III, the patient was readmitted to hospital and total hysterectomy was performed. Further X-ray therapy was given. The pathologist found no areas of malignant infiltration in the uterus, tubes, ovaries, or peritoneum; his findings included chronic metritis with sub-involution, multiple small fibromyomata, chronic catarrhal salpingitis, chronic sclerosis of the ovaries and chronic pelvic peritonitis, with scar. The authors point out that there are three items of interest in these cases: (i) the apparent association of carcinoma with tuberculosis of the Fallopian tube; (ii) the severe ascites of the second patient, possibly due to the attachment of the fimbriated end of the tube to the parietal peritoneum; (iii) the fact that both patients were living and apparently in good health at the time when the article was prepared.

Chronic Mastitis.

HOWARD C. TAYLOR, JUNIOR (*Surgery, Gynecology and Obstetrics*, February 16, 1942) presents a study of the endocrine aspects of chronic mastitis. He divides the lesion into two types, that characterized by adenofibrosis and that characterized by non-puerperal secretion of a milky fluid from the nipple. The chief symptoms of the first type are premenstrual pain and swelling, almost certainly due to vascular engorgement or to increase in tissue fluids; a diffuse induration of the outer quadrant of the breast, however, indicates a second stage in most of these cases. An actively functioning ovary is obviously a prerequisite to the development of the disease; yet there are many reasons why it should not be ascribed to some simple quantitative abnormality of sex hormone physiology. Many signs point to the need for study of nervous and vascular factors, to determine whether these may bring about abnormalities in the cellular environment of the breast that could lead to the organic changes of fibrosis. The second type of chronic mastitis, associated with secretion from the nipple, may be characterized histologically by slight hyperplasia of the acini. The dilated ducts soon become filled with desquamated cells and stagnating secretion. It seems probable that when such a condition is of long duration, periductal inflammation, cysts, and hyperplastic or metaplastic changes in the duct lining may result. In many such cases an endocrine disturbance in the form of grossly disturbed menstrual cycles is evident. There is fairly good theoretical justification for treatment with œstrogens or androgens; but the author's results have been inconclusive. For the reasons given, and chiefly because stimuli of the hormone type are the true causes of milk formation,

he thinks that an abnormal, milk-like discharge from several ducts often has an endocrine basis. In the author's experience glandular therapy has been of no value in chronic mastitis; he believes that the only established fact is that abolition of the ovarian function by castration will bring about cessation of pain in almost all cases of adenofibrosis and slow but definite disappearance of the nodularity. The œstrogens are probably contraindicated, in view of their capacity to cause epithelial proliferation and breast engorgement; the androgens and perhaps progesterone, by suppressing ovarian function, may produce temporary improvement; but there is no evidence to suggest that these results will be permanent.

Uterine Contractions in Dysmenorrhœa.

W. BICKERS (*American Journal of Obstetrics and Gynecology*, December, 1941) reports the results of investigations of the uterine contractions of fifteen patients with dysmenorrhœa. A small balloon attached to a flexible metal cannula was placed in the uterine cavity and it was found that there was a marked difference between the contractions of those with menstrual pain and those without. Tetany was never seen in the non-painful menstrual period, but a typical tracing was found in 13 out of 15 cases studied. Dysmenorrhœa occurred in the presence of high amplitude contractions superimposed upon tetany. High amplitude contractions occur only when *corpus luteum* is present, and from this it may be deduced that dysmenorrhœa occurs only in the ovulatory cycle. It was noted that atropine, ephedrine, adrenaline and calcium gluconate did not alter the uterine motility or give relief from pain. Alcohol did not alter the uterine motility, but appeared to diminish the pain either by its action on the nervous system or by its vasodilating effect upon the arterioles of the myometrium. Morphine, however, diminishes the amplitude of the contractions, abolishes tetany and relieves the pain. Œstrogen in the first half of the cycle in large doses may either prevent ovulation or inhibit the action of the luteinizing hormone on the anterior pituitary, thereby curtailing the progesterone effect on the uterus, and thus by eliminating the high amplitude contractions relieve pain. Progesterone has no effect in the relief of pain, nor has testosterone.

OBSTETRICS.

The "Frog" Test as a Rapid Diagnostic Test for Pregnancy.

A. I. WEISMAN, A. F. SNYDER and C. W. COATES (*American Journal of Obstetrics and Gynecology*, January, 1942) report on a series of 53 suspected cases of early pregnancy tested by the *Xenopus lævis* or frog test and checked with the Friedman (rabbit) test. They obtained 100% accuracy with the frog test. It is suggested that the frog test, because of this high degree of accuracy and rapidity of reaction—four to eighteen hours—may be used when a quick diagnosis of pregnancy is imperative. Other advantages are that no operation is required, maintenance is simple, frogs are cheap and they can be used over and over again. No special precautions have to be taken and the end reaction is the simple observance of eggs in water. The frogs are kept in a twelve-gallon aquarium, ten frogs in each. One tank is used as a "rest" tank in which the animals recuperate for four weeks after receiving an injection, and the other tank is the "active" tank from which animals ready for use are taken.

The Posterior Pituitary Factor in Toxæmias of Pregnancy.

C. MUKHERJEE (*The Journal of Obstetrics and Gynæcology of the British Empire*, October, 1941) reports his investigation on the action of ultrafiltrates of blood from toxæmia patients. The melanophoric response on the frog, the antidiuretic action on guinea-pigs and the pressor action on cats were tested, whilst its action on human beings with toxæmia was also observed. From the experiments it appears that the blood of patients suffering from toxæmia of pregnancy contains an ultrafiltrable substance which is seen by experiments on laboratory animals to have melanophoric, antidiuretic, and vaso-pressor properties. The only known substance in the body to have an antidiuretic action and a melanophoric action is pituitary extract, and the only two substances that will raise the blood pressure are the hormones of the adrenal medulla and the posterior lobe of the pituitary gland; the latter reaction is quite different to the former and is easily differentiated. It therefore seems fair to assume from these experiments, since ultrafiltrates of the blood from a toxæmic patient will give all these three reactions, that it contains autacoid of the posterior pituitary gland, and that toxæmia is due to the action of the pituitary gland. What stimulates the pituitary has still to be discovered.

Extracellular Water in Late Pregnancy and its Relation to the Development of Toxæmia.

L. C. CHESLEY and ELIZABETH R. CHESLEY (*American Journal of Obstetrics and Gynecology*, December, 1941) discuss the question of gain in weight and extracellular water and its effect on toxæmia. Many woman gain excessive weight, but not all of them develop toxæmia. It was thought that there was a difference between patients who gained weight by the addition of fat or protoplasm and those who had extracellular water. The determination of extracellular water was made by injecting a known quantity of thiocyanate; it was found that some patients, although they had a normal gain in weight, had excessive available water and were prone to develop the classical signs and symptoms of pre-eclampsia. Pre-eclampsia seldom appeared in those patients having normal proportions of available water in late pregnancy.

Thyreoid Extract and Iodine Therapy in the Prevention of Toxæmia of Pregnancy.

E. D. COLVIN, R. A. BARTHOLOMEW and W. H. GRIMES (*American Journal of Obstetrics and Gynecology*, February, 1942) discuss their experiences with the use of thyreoid extract and iodine in the prevention of toxæmia of pregnancy. These authors have previously written in regard to the determination of toxæmia from the "unknown" formalin-fixed placenta. The reaction of guanidine in animals was to produce arteriolar spasm, hypertension, albuminuria and liver and kidney damage. The authors' belief is that the infarcts in the placenta are caused by damage to the fœtal vessels which are adversely affected by the hypercholesterolæmia of pregnancy. This work was carried out in the southern States of America, and it was found that two-thirds of the patients investigated had a low metabolism rate, which may have a bearing on the higher incidence of toxæmia in the south-east compared with the northern States. The authors have been able to show that the administration of iodine in the form of lipoiodine lowered the incidence of toxæmia by almost two-thirds in the cases under review. Thyreoid, on the other hand, apparently conferred no protection whatever.

Diabetes Mellitus and Pregnancy.

H. H. FOURACRE BARNES (*The Journal of Obstetrics and Gynæcology of the British Empire*, December, 1941) reviews the histories of 21 patients with *diabetes mellitus*. The youngest patient pregnant for the first time was twenty-four years of age and the eldest 43, the average for the series being 33 years. It is probable that the rarity of diabetes in an obstetric hospital is due to the fact that diabetes is a disease of the later decades of life rather than of the more prolific child-bearing years. With the advent of insulin the atrophy of the genital organs has ceased and the possibility of pregnancy has increased. The author concludes from these histories that the evidence of late toxæmia is not greatly increased, although some authors suggest that the possibility of a toxæmia is considerably increased. The prognosis of the life of the mother is good and the severity of the condition is not increased, provided the diabetes is well treated. However, the prognosis for the fœtus is poor in spite of the great advance made in the treatment of diabetes. Fœtal death occurs in spite of the absence of ketosis, but its presence increases the risk to the fœtus. One of the potent causes of intrauterine death of the fœtus is the occurrence of toxæmia in the pregnant diabetic. The fœtal death rate when toxæmia occurs is about twice as high as the rate when toxæmia is uncomplicated by diabetes. It is suggested that the control of the patient should be shared with the physician, who will supervise the diabetes and avoid the possible occurrence of hypoglycæmia or ketosis. To ensure that toxæmia will not develop careful antenatal care is essential. An X-ray examination of the fœtus may exclude any gross fœtal abnormality and so save an unnecessary Cæsarean section. The method of delivery has to be considered in each case; where no evidence of toxæmia is apparent the patient may be allowed to go to term and be delivered naturally, consideration being paid to the size of the fœtus. Should the pregnancy be complicated by toxæmia and the X-ray appearances be normal, Cæsarean section about the thirty-sixth week offers the best chance of survival of the fœtus, especially if the mother is an elderly *primipara*. The tendency of the baby to develop hypoglycæmia may be overcome by the administration of sugar.

Naval, Military and Air Force.

APPOINTMENTS.

THE undermentioned appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 177, of June 25, 1942.

AUSTRALIAN MILITARY FORCES.

Australian Army Medical Corps.

The following officers are transferred from the Australian Army Medical Corps, Australian Imperial Force, with regimental seniority in accordance with Army seniority: Captains WX29 R. R. Andrew, 12th May, 1942, QX23977 C. M. McCarthy, 4th April, 1942, and to be Major (temporarily), 12th May, 1942, SX15732 R. H. Elix, SX15734 R. M. Hains and SX15736 L. S. Wallman, 13th April, 1942.

Major H. I. Carlile and Captain (provisionally) C. A. Jones are transferred with regimental seniority in accordance with Army seniority, 1st April, 1942, and 24th April, 1942, respectively.

Captain (provisionally) V132436 J. R. Sherwin is retired 25th April, 1942.

The following officers are appointed from the Reserve of Officers: Major H. I. Carlile, 25th January, 1940, and Honorary Captains E. N. Rosen and A. H. Millikan and to be Captains (provisionally) 1st May, 1942, and 4th May, 1942, respectively, and Captain J. R. Robertson, 14th May, 1942.

To be Major (temporarily).—Captain V29353 N. A. Longden, 2nd May, 1942.

To be Major.—Charles Ernest Sandford Jackson, 19th May, 1942.

To be Captains (provisionally).—Thelma Lottie Latimer and Edmund Collins, 20th May, 1942, and Henry Leo Brewer, 21st May, 1942.

To be Honorary Captains.—Vincent Henry Hegarty, 12th May, 1942; George Reid and Patricia Ann Rankin, 14th May, 1942; Joyce Margaret Euphan Bell, 16th May, 1942; John O'Rorke, 18th May, 1942; Lloyd Wallis Bryant, 21st May, 1942.

The provisional appointment of Captain N83387 J. H. D. Edwards is confirmed.

Captain (Temporary Major) Q48262 W. V. Connor is brought on the authorized establishment of Majors, 22nd June, 1941.

The resignation of Captain (provisionally) R. W. C. Kelly of his commission is accepted, 4th April, 1942.

The following officers are retired: Major (provisionally) N393009 A. H. Baldwin, 19th April, 1942, and Captain (provisionally) J. M. Barrett, 9th March, 1942.

The following officers are transferred to the Reserve of Officers (A.A.M.C.) and to be Honorary Captains: Captains (provisionally) J. A. Emmett, 23rd December, 1941, J. E. Overstead, 2nd April, 1942, H. Dolman, 6th April, 1942, and S34263 W. F. Joynt, 22nd April, 1942.

Captain (Temporary Major) J. H. Coles is transferred with regimental seniority in accordance with Army seniority and retains the temporary rank of Major, 28th April, 1942.

Major R. Whishaw is transferred from Australian Army Medical Corps, Australian Imperial Force, with regimental seniority in accordance with Army seniority, 28th April, 1942.

Major W. Davis and Captain V. G. Webb are appointed from the Reserve of Officers, 27th February, 1942, and 11th February, 1941, respectively.

The following officers are appointed from the Reserve of Officers and to be Captains (provisionally): Honorary Captains S. J. Newing, 29th July, 1940, A. E. Alcock, 22nd November, 1940, H. N. M. Puckle, 15th January, 1942, M. W. Carseldine, 24th January, 1942, I. D. McInnes, 2nd February, 1942, T. P. Dawes and N318309 P. H. Speight, 1st March, 1942, H. M. J. Windsor, 2nd March, 1942, R. W. Dungan and E. F. A. Shaw, 9th March, 1942, S. K. Crownson, 12th March, 1942, P. F. R. Brown, 13th March, 1942, E. C. Varley and F. J. Foley, 16th March, 1942, M. C. Irvine, 23rd March, 1942, I. V. Yoffa, 2nd April, 1942, V. S. Parer, 25th April, 1942, and R. Row, 29th April, 1942.

To be Majors (temporarily).—Captain (provisionally) V65535 J. M. Fone, 4th April, 1942, and Captain QX24600 J. H. Thorp, 9th April, 1942.

To be Captains (provisionally).—Roy Keith Gay, 8th May, 1942, and Alfred Moffatt Whyte, 12th May, 1942.

To be Honorary Major.—Honorary Captain J. F. Williams, 11th May, 1942.

To be Honorary Captains.—James Noel Ure, 8th May, 1942; William Sidney Page, 9th May, 1942; and Alan Twyman Clements, 12th May, 1942.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

Alec Hutcheson Baldwin (4907) is appointed to a commission on probation with the rank of Flight Lieutenant and is promoted to the rank of Temporary Wing Commander, with effect from 22nd April, 1942.

Surgeon Commander Clive Henry Reynolds James, M.B., B.S. (5162), is appointed to a temporary commission with the rank of Flight Lieutenant (Temporary Squadron Leader), with effect from 20th April, 1942, whilst seconded from the Royal Australian Navy.

The following are transferred from the Reserve to the Active List, with effect from the dates indicated: E. H. R. Deck (4105), V. P. Golden (4106), I. M. Westwood (3951), 27th April, 1942; J. R. F. England (3727), H. Hoban (4852), F. J. Kenny (4851), D. J. Lampard (2874), L. C. Rowan (3729), 4th May, 1942.

Reserve: Medical Branch.

John Aloysius Kennedy (5194) is appointed to a commision on probation with the rank of Flight Lieutenant, with effect from 29th April, 1942.—(Ex. Min. No. 77—Approved 24th June, 1942.)

CASUALTIES.

ACCORDING to the casualty list received on July 1, 1942, Captain M. M. Brown, A.A.M.C., Hobart, Tasmania, is reported to be a prisoner of war.

According to the casualty list received on July 2, 1942, Captain G. M. Crabbe, A.A.M.C., New Norfolk, Tasmania, Major J. S. Chalmers, A.A.M.C., Hobart, Tasmania, Captain T. G. H. Hogg, A.A.M.C., Launceston, Tasmania, and Captain E. N. Lee, New Town, Tasmania, are missing abroad.

DECORATIONS.

WE have been notified by the Director of Medical Services of the Royal Australian Air Force that the following awards have been granted to medical officers. Wing Commander C. J. N. Leleu has been made an Officer of the Most Excellent Order of the British Empire. Squadron Leader S. F. Reid has been "mentioned in dispatches".

Correspondence.

MEASUREMENT OF THE DRYING CAPACITY OF WIND.

SIR: I have to thank Professor Osborne for his interesting letter of comment on my article on "Measurement of the Drying Capacity of Wind". I foresaw criticism of the value of velocity data, and myself said that owing to inaccuracy of recordings, the method could only arrive at an approximation. Of course that also means that with accurate original material the method will provide accurate results. It is a sort of machine turning out a product that depends on what is fed into it. I said of my own deductions that "though not more accurate, they are not likely to be less useful than the original material". Meteorologists are not in practice as pessimistic as Professor Osborne regarding the lack of value of velocity data. In their scientific papers, journals, and books they refer constantly to data of wind velocity and wind direction as part of their original material, and evidently as a valuable part. Yet they know the data are not accurate. And to the meteorologists can be added that very competent physiologist, Sir Leonard Hill, the inventor of the katathermometer.

Let me say also that in my paper I laid strong emphasis on the fact that it was directed to the measurement of drying capacity, not to the measurement of the water actually absorbed, nor to the conditions there involved, which

I refused to discuss, as outside the subject. The measurement of evaporation is a different question, and I warned readers against confusing the two. I can say here, however, that as I see it, the practical accurate recording of evaporation rates is beset with enormous difficulties. We shall all be glad to see Professor Osborne lead the way to a settlement of that problem. When it is settled, but I hope not before it is settled, let us begin to compare the practical value of one system with the other.

Yours, etc.,

C. E. CORLETTE.

175, Macquarie Street,
Sydney,
June 16, 1942.

DOCTORS AND THE DRINK TRAFFIC.

SIR: It is surprising that so little comment has been made in support of Dr. Roseby, who in the journal of May 2 called for action to oppose the destructive influence of excessive drinking on our young men and women in the services. Alcoholism is a behaviour problem, often with serious effects on bodily health, and it is therefore incumbent on us both individually and professionally to take action to abate the moral and physical ill effects of this practice.

On the Continent where alcohol is drunk freely one rarely saw Germans, French or Italians intoxicated. One cannot quote as an excuse for the common occurrence here that we are biologically different and therefore react to alcohol in a different way.

Drunkenness is sometimes an escape from realities, but surely there is much less reason for the operation of such a psychological mechanism in this land of freedom and plenty than on the Continent with its varied and complex problems of living.

It appears that drunkenness with us is just a bad habit—the thing to do—amongst young people and shows a lamentable lack of training in self-discipline. Most of us will recollect in our student days how many of our fellow students would get "a skin full" on Saturday nights. They were usually clean, wholesome, high-spirited lads seeking for self-expression, and as it was the accepted thing to do they went out and got drunk and amused their fellow students on their return to college.

The same practice is noticed in the camps. Some men return to camp after a night in town and put on a show of intoxication; their drunken antics are discussed next day with amusement and the erring one, instead of experiencing a sense of contrition, considers himself somewhat of a hero.

The problem of breaking this foolish habit must be tackled and we are best fitted to deal with it. I am confident that much can be done by education and I submit a new approach to the problem.

Instead of criming a man for drunkenness, he should be paraded before the medical officer, who should give him a friendly talk, not suggesting that it is sinful but silly to get drunk. It should be considered an indication of weakness of mind—just a little unbalanced, poor chap attitude.

For the second offence, in order to impress on the victim the subnormal mental aspects of his conduct, he should be paraded before a psychiatrist who should undertake a full investigation of his mental state. (If possible it is desirable that this should be conducted at a mental institution.)

By this treatment the glamour of getting drunk would disappear, as nobody likes to be considered mentally weak or held up to ridicule.

Some of the diehard drunkards may not be controlled, but the rationale of the treatment is not so much the effect it will have on the offending individual, but on the opinion of his associates, and I am sure the force of human gregariousness is so great that this foolish habit would be broken amongst the majority of the younger men and women.

In addition to this treatment people should be encouraged to drink in the English and Continental fashion by sitting at a table and yarning leisurely over their drink. Tables and chairs should be provided at all wet canteens for this purpose.

As an interesting and important experiment in this reform, could any medical officers on service persuade their commanding officers to adopt these measures?

Yours, etc.,

L. J. JARVIS NYE.

Brisbane Clinic,
Wickham Terrace,
Brisbane.
June 18, 1942.

MEDICINE, WAR AND PEACE.

SIR: Most of your readers will agree with some of Dr. Cantor's remarks under the above heading in your correspondence columns of May 30 last: for instance, that war is a pandemic disease and that its biological problems are of vital interest to physicians. We can also pretty generally agree that war and the end of war (which he calls peace) are man-made; but those of us who regard war as an extension of diplomacy—as one of the weapons of diplomacy—will hardly regard his diagnosis of the causes of war, and their treatment by centralizing authority under a world-wide federation as acceptable. We are more likely to think that the invoking of "authority", of coercion, is an epidemic disease threatening to become pandemic! The very future of our profession is wrapped up in our views on these matters. If our people are to be organized on authoritarian (really fascist) lines, then hardly can we escape the like fate. Already too many of the profession are seeking centralization of it, with its inevitable thrusting of a third party between doctor and patient. If we are to save our own freedom we must save the people's freedom—this is a "common cause".

The League of Nations did not fail because of lack of authority, but because of its use of authority in sanctions *et cetera*. The League should have only moral authority, not military power; the two are incompatible. The League should tell us what is right to do—it should not have the power to enforce its decisions. Only moral suasion, with all its discussions and divisions of opinion, and patience, can really persuade the world, as a world, to the practice of virtue.

Has Dr. Cantor forgotten civil wars, rebellions and riots, all of which occur under authority? We have learned by experience that war gives us National Security laws (martial law) during its currency, and afterwards dictatorships, as Lenin in Russia, Mussolini in Italy and Hitler in Germany; and dictatorships give us war as we are now experiencing. Clearly authority promotes and does not prevent wars. Just as Apple and Pear Boards ruin the grower and deprive the consumer, so will centralization of the profession distress both doctor and patient! Federal Union, under the existing economic system, would mean a despotism of the most virulent kind, and one with overwhelming military power!

The only thing which will prevent war, and its antecedent, armed diplomacy, is the practice of justice within and without the nation. The ancient prophets taught that war was due to the disregard of the laws of Moses, and specifically to the practice of usury. As our economic system is based on a legalized usury we offer a confirmation of the accuracy of their diagnosis of the causes of war.

Only economic, political and religious freedom can give us a peace that is more than an armed armistice, and can give us justice within the nation, so abolishing the unemployment and malnutrition which have disgraced every nation of European origin, not least our own. Australia can only achieve justice within its own nation (so setting a pattern to the world at large) by demanding an inquiry (a Royal Commission) into the economic and monetary causes of war. Let not the most individual of professions ask for more "authority" either for itself or for other people. "Live and let live" should be our motto.

Yours, etc.,

MARY C. DE GARIS.

Geelong,
June 17, 1942.

ANÆSTHESIA AND DENTAL SURGERY.

SIR: The letter from the Australian Dental Association (Victorian Branch) to the Victorian Branch of the British Medical Association, copy of which appeared in THE MEDICAL JOURNAL OF AUSTRALIA of the 13th instant, surely calls for a spirited reply.

The whole objective is obviously to secure the cooperation of the profession in the adoption of methods of anæsthesia which are at once second-rate, ineffective and makeshift.

There is tacit agreement with the type of anæsthesia already recommended by the profession (namely, endotracheal anæsthesia with adequate pharyngeal packing); indeed it is referred to as a "counsel of perfection".

We as anæsthetists regard it as the only method consistent with the patient's safety and welfare, for use in operations of any duration on the mouth and pharynx, with their concomitant risk of the aspiration of blood, mucus and débris. True it is that "the general practitioner, as a rule, cannot

give this type of anæsthetic". But surely the remedy does not lie in devising a makeshift, easier type of anæsthesia which the general practitioner can give. One wonders what objection the Victorian dentists have to securing the services of those with the necessary skill, time, training and apparatus to follow the "counsel of perfection". If the patient's disinclination to "pay for specialists and hospitalization" is responsible, then the dentists surely owe it to their patients to make clear the dangers and difficulties of prolonged dental procedures under general anæsthesia, unless the anæsthesia is of the correct type. No doubt the unfortunate victims of lung abscess and its dreadful sequelæ have ample time to contemplate the expense of "specialists and hospitalization" in a big way; and some at least of them must have recalled the old proverb about being "penny wise and pound foolish".

Neither of the palliative measures suggested will commend themselves to those who have a thorough knowledge of the basis of anæsthesia, particularly in its application to dental work. The suggested adoption of a modified Fowler position is aimed rather at establishing greater comfort for the dentist in carrying out his work than in protecting the patient; but it is very probable that the dentist's discomfort is in no small measure due to the poor anæsthesia given under unsuitable conditions in a poor light and with poor appointments and with the resulting necessity of his having to adopt smash and grab tactics in an effort to complete his work before the patient recovers from the interrupted open ether anæsthesia which has been given. It is not possible to adequately pack a pharynx when the anæsthetic is administered through a nasal catheter and at the same time to allow respiration to continue satisfactorily. Again, it is extremely difficult to maintain anæsthesia under such circumstances with a "hand blower", and impossible if the patient is an adult of the resistant type. The widespread adoption of such methods could obviously lead to the assumption of a false sense of security with even worse results than beforehand.

In short, there is no way of sidestepping the time-honoured principle that the only treatment for the patient is the best possible.

The concern of the Victorian Branch of the Australian Dental Association at the increasing frequency of lung abscess can only be allayed by a firm determination to encourage the employment of the anæsthetic technique which expert experience has proved to be safe, reliable and in the best interest of the patient and operator, even though this may clash with the interests of medical practitioners who "cannot as a rule give this type of anæsthetic", dental practitioners who cannot extract teeth from a supine patient, and patients who do not consider the safeguarding of their health and lives from such disasters as lung abscess worth the small extra cost.

Yours, etc.,

CLIVE N. PATON.

185, Macquarie Street,
Sydney,
June 18, 1942.

SIR: A letter from the Victorian Branch of the Australian Dental Association was forwarded to the Victorian Branch of the British Medical Association and was published in THE MEDICAL JOURNAL OF AUSTRALIA on June 13, 1942. This letter stated that the Australian Dental Association "was concerned over the increasing frequency of abscess following dental extractions under open ether anæsthesia given in the supine position", and some methods of anæsthesia were suggested which might overcome the incidence of such disasters. As you already know many dental extractions are best dealt with under some form of local block anæsthesia. When multiple extractions are necessary, recourse is often made to general anæsthesia. The medical profession has rightly recommended endotracheal anæsthesia as the solution to this problem. Details of anæsthesia in dentistry were dealt with in full in a lecture given by Dr. S. V. Marshall, and published in the journal of the Australian Dental Association of November 1, 1937. Reference to this paper is recommended. In the first place it must be recognized that the extraction of a number of molar teeth under general ether anæsthesia should be classed as a major surgical procedure, and as such, due precautions must be taken (as in any other intra-oral operation) to prevent the aspiration of infected material from the mouth into the lungs. The patient should be told to expect a reasonable fee for this specialized form of anæsthesia. It is desirable, though not absolutely necessary, that the patient be hospitalized.

Endotracheal anæsthesia is not only the "Counsel of Perfection" but the "Mother of Necessity", and is the method of satisfactorily dealing with these cases, combining safety for the patient and freedom from anxiety for the surgeon. If the general practitioner (of whom I was one for ten years, and carried on this form of anæsthesia for my dental confrères) is to undertake these anæsthetics—and there is no earthly reason why he should not—then he must familiarize himself with the technique. The old insufflation technique previously employed has been superseded by the Magill method. In brief the Magill technique is as follows: After the patient has been anæsthetized by the open method, a large rubber tube is passed through the nose into the larynx, so as to be out of the field of operation. The passing of this tube through the nose into the larynx requires some skill, which can be acquired after a little practice. The hypo-pharynx is then packed off concertina-fashion with an eighteen-inch strip of gauze four layers thick and about two inches wide, previously soaked and rung out of an emulsion of equal parts of water and liquid paraffin. When the patient has settled down in surgical anæsthesia, the anæsthetist should do this packing under direct vision with his laryngoscope and Magill forceps. The teeth are then extracted and all bleeding is stopped, each socket being dealt with in turn. An efficient sucker is a boon, and almost a necessity, for clearing the mouth of blood and debris. At the close of the operation the machine is turned to "air" for some minutes. The patient is now turned well over on to his side, and the sucker used to clear any blood which has collected in the lower cheek pouch. When swallowing and/or coughing denotes "lightening" of anæsthesia the gauze is then gently removed. The end of the gauze should be clean and not soiled with blood—proof that no blood has seeped into the entrance of the larynx. When this stage is reached the Magill tube should be withdrawn. The patient is put back to bed well over in the right lateral position. A pillow should be placed against the chest with the upper arm draped over it. This serves to support the patient in the right lateral position, and permits free expansion of the lungs. It is only by attention to these details that inhalation of infected material into the lungs can be avoided. I see no reason why these patients should not be operated on with the head and shoulders propped up, though most oral surgeons have now accustomed themselves to operating with the patient in the supine position, and appear to prefer it. With regard to the insufflation technique (recommended by the Australian Dental Association), in which air-laden ether is blown into the pharynx by means of a nasal catheter, I consider that this method increases the danger of carrying the infected blood down into the larynx with the stream of ether-laden air. It is obvious that the larynx cannot be completely cut off from the pharynx because there is then no exit for the exhaled gases. Anæsthesia by means of nasal catheters in the pharynx often fails to maintain the patient in surgical anæsthesia, so weak is the percentage of ether carried through these small tubes. Thus the patient is apt to come "light" even to the coughing stage, which increases the danger of inhaling blood, infected debris, and occasionally vomitus. These catheters are difficult to clean because they have a very small lumen which is even further encroached on by old blood clots left from previous cases. Nitrous oxide oxygen is a suitable method of anæsthesia for short dental extractions, and many dental practitioners have remarkable skill in its administration, but "open" ether, especially given in the supine position for multiple extractions, exposes the patient to grave risk of lung infection.

Yours, etc.,

H. J. DALY.

143, Macquarie Street,
Sydney,
June 26, 1942.

Postscriptum.—Since this letter was written an editorial has appeared in THE MEDICAL JOURNAL OF AUSTRALIA, and I wish to endorse the remarks contained therein.

POST-OPERATIVE TREATMENT OF MASTOID OPERATIONS.

SIR: At yesterday's clinical meeting of the British Medical Association (New South Wales Branch) at the Royal North Shore Hospital of Sydney I exhibited a case of acute mastoiditis in which primary closure of a simple mastoid operation wound had been done with the use of drainage by means of a glass tube. A number of visitors who viewed this case asked me to explain what was the difference between this technique and that demonstrated by Dr. R. E. Buckingham in the journal of June 13.

On reading this article carefully I find several points which call for some comment and I ask your indulgence for the purpose.

The record of ten years' mastoid work published from this hospital by Dr. Clowes and myself in December, 1941, showed, conclusively I think, that the classical type of radical mastoid operation is a dead letter and that only the conservative type of operation with retention of the ossicles and membrane is desirable. Since the only types of chronic otitis which require operating have the middle ear more or less intact there can be no reason for seriously interfering with its contents. It was shown, also, that there is no need for any kind of careful plastic operation because a simple slitting of the posterior wall does all that is necessary. The desired end is a totally dry ear; there can be no real reason for "drainage" to be necessary. As to perichondritis, I have never seen it as a complication of mastoid operating in eighteen years of special practice.

As to the dressings I do not think Dr. Buckingham's proposal offers much alleviation of the patient's sufferings. An average of two internal dressings are necessary. Neither is particularly painful, and the posterior wound is always healed and the patient goes home in ten days with only two or three superficial dressings.

Yours, etc.,

ERIC B. BLASHKI.

193, Macquarie Street,
Sydney,
June 19, 1942.

N.E.S. PRACTICE TESTS AND THE SPLINTING OF FRACTURES OF THE LEG.

SIR: During an N.E.S. practice test yesterday the stretcher party, of which I am commandant, had to deal with a case of fractured leg in a girl of ten or eleven. When I found that the leg had been splinted on the outer side, but not on the inner, I asked why. The first-aid man replied that he had been instructed that, if the patient were a female, no splint should be applied on the inner side of the leg.

Careful perusal of the St. John Ambulance Association's handbook, "First Aid to the Injured", and attendance at the course of lectures, show that there is no recognition of the fact that human beings possess a reproductive system at all. It is unfortunate that bombs, shells, bullets, and other destructive agencies which are likely to be active in wartime do not observe this nice distinction between those organs which are acknowledged by the Association and the others that are stigmatized, if we mention them at all, as the "pudenda".

Nor is there the slightest hint, in the course of training, that, as human beings do not, alas, reproduce themselves by binary fission or budding, women occasionally become pregnant, and that a pregnant woman may suddenly be in need of urgent help.

With some trepidation, I venture to suggest that, in the present emergency, this particular manifestation of sexophobia is both stupid and dangerous.

Yours, etc.,

NORMAN HAIRE.

193, Macquarie Street,
Sydney,
June 22, 1942.

The Royal Australasian College of Physicians.

EXAMINATION FOR MEMBERSHIP.

PROVIDED that a sufficient number of candidates is offering and if circumstances permit, an Examination for Membership of the Royal Australasian College of Physicians will be held in Sydney in August and September, 1942.

The examination will consist of: (i) A paper on the principles and practice of medicine, including pathology, therapeutics and the history of medicine. (ii) An oral examination, which may include the clinical examination of patients, together with the identification of naked-eye and microscopic specimens.

The written paper will be taken in capital cities where candidates are offering on Saturday, August 29, and the corresponding clinical examination will be conducted in Sydney on Thursday, September 24.

Application forms may be obtained from the office of the College, 145, Macquarie Street, Sydney, and should be in the hands of the Acting Honorary Secretary at this address not later than August 1, 1942.

Obituary.

DOMINIC VICTOR SHEIL.

WE are indebted to Dr. Otto Hirschfeld for the following account of the career of the late Dr. Dominic Victor Sheil.

The medical profession in Brisbane was shocked to hear of the sudden death of Dr. D. V. Sheil at the early age of forty-one. He had gone to the seaside for the week-end apparently full of that boundless energy which was so characteristic of him.

After a brilliant school career he graduated with honours in Melbourne in 1923. He came to Brisbane as resident at the Hospital for Sick Children in February, 1924, then became a resident medical officer at the Brisbane General Hospital.

Even as a student in Melbourne, the late Don Sheil was one of the few among us who did not burn with the desire to set the world on fire with his surgical ability. At the General Hospital he came in contact with the late Eustace Russell who fixed in him the ambition to become a physician. He spent a short period in north Queensland, and in May, 1926, he entered into partnership with Dr. A. Gerard Anderson (surgeon to the Brisbane Hospital) in a busy general practice in a Brisbane suburb.

He was appointed an honorary physician to out-patients at the Brisbane Hospital in 1929, after three years' work as clinical assistant, and for the next eight years worked very hard in an exceedingly busy out-patients' department, as well as in his ever-increasing practice. In 1936 he went to England, and after a few months' post-graduate study, qualified as M.R.C.P. (London) at his first attempt. No small achievement. On his return to Brisbane he started practice as a consulting physician.

Sheil was one of those men whose minds mature with age, he had a fine memory and great clinical acumen, and this fitted him for what was to him and his associates a great adventure. At the end of 1938 the Brisbane Hospital abolished the honorary system, and all appointments were terminated; all positions were put on a part-time basis and Sheil was appointed a senior physician. At the same time he was appointed a clinical lecturer in medicine at the University of Queensland. This charge at the hospital coincided with the arrival at the hospital of the first batch of fourth year medical students, 22 in number. This may

seem a commonplace to men connected with teaching hospitals, but there was a new medical school without traditions and without the elaborate organization that had been built up over years in the southern schools; moreover, men became senior clinical teachers without that steady apprenticeship in teaching from clinical assistants upwards over a course of years which they get in an established teaching hospital. Sheil threw himself into this work with characteristic energy, and proved a tower of strength.

As a teacher he was didactic, thorough and had great experience to draw on. He drilled his students in the fundamentals of medicine and did not let them wander off into speculative regions, nor allow too much time for the discussion of rare cases. It would not be an exaggeration to call him a great clinical teacher. His memorial will be the traditions which he has helped to establish already in this young medical school.

WILLIAM BRYCE KERR.

We regret to announce the death of Dr. William Bryce Kerr, which occurred on June 30, 1942, at Sydney, New South Wales.

HERBERT BUXTON LUDLOW.

We regret to announce the death of Dr. Herbert Buxton Ludlow, which occurred on June 26, 1942, at Annandale, New South Wales.

Post-Graduate Work.

LECTURES AND WARD DEMONSTRATIONS IN SYDNEY.

The New South Wales Post-Graduate Committee in Medicine announces that further arrangements for the winter lectures held at 4.30 p.m. on Monday afternoons, at the Stawell Hall, Royal Australasian College of Physicians, 145, Macquarie Street, Sydney, are as follows:

1. Monday, July 13, 1942, 4.30 to 6 p.m.—Library seminar: "The Sulphonamides", by Dr. H. R. G. Poate and Dr. S. A. Smith.
2. Monday, July 20, 1942, 4.30 to 6 p.m.—"Burns", by Major B. K. Rank.
3. Monday, July 27, 1942, 4.30 to 6 p.m.—Programme will be arranged by 118th General Hospital Unit, United States Army.

There will be no charge for attendance at these lectures, which are open to all members of the medical profession. Medical officers of the United States and Allied forces are also invited to be present.

Arrangements have been made for a number of medical officers of the defence and Allied forces to attend hospital ward rounds at the Royal Prince Alfred Hospital, Camperdown, on Tuesday and Thursday afternoons, by Lieutenant Commander Kempson Maddox. The number for attendance is limited and those who wish to attend should communicate with the Secretary of the Post-Graduate Committee, 145, Macquarie Street, Sydney (telephone B 4606).

Australian Medical Board Proceedings.

TASMANIA.

The undermentioned has been registered, pursuant to the provisions of the *Medical Act*, 1918, of Tasmania, as a duly qualified medical practitioner:

Ingram, Thomas Giles, M.B., B.S., 1942 (Univ. Melbourne), Sassafras, Tasmania.

QUEENSLAND.

The undermentioned has been registered, pursuant to the provisions of *The Medical Acts, 1939 to 1940*, of Queensland, as a duly qualified medical practitioner:

Leicester, William Samuel, M.R.C.S. (England), L.R.C.P. (London), 1907, section 19 (1) (b), Gin Gin.

Books Received.

"Endotracheal Anæsthesia", by Noel A. Gillespie, D.M., B.Ch., M.A. (Oxon), D.A. (R.C.S. England); 1941. Wisconsin: The University of Wisconsin Press. Demy 8vo, pp. 200, with 1 coloured plate and 44 illustrations. Price: $4.00 net.

"The Keys of the Kingdom", by A. J. Cronin; 1942. Sydney: Angus and Robertson Limited. Crown 8vo, pp. 398. Price: 10s. 6d. net.

Diary for the Month.

JULY 14.—New South Wales Branch, B.M.A.: Executive and Finance Committee, Organization and Science Committee.
JULY 14.—Tasmanian Branch, B.M.A.: Branch.
JULY 15.—Western Australian Branch, B.M.A.: Branch.
JULY 21.—New South Wales Branch, B.M.A.: Ethics Committee.
JULY 23.—New South Wales Branch, B.M.A.: Clinical Meeting.
JULY 24.—Queensland Branch, B.M.A.: Council.
JULY 28.—New South Wales Branch, B.M.A.: Medical Politics Committee.
JULY 30.—New South Wales Branch, B.M.A.: Branch.
JULY 30.—South Australian Branch, B.M.A.: Branch.
JULY 31.—Tasmanian Branch, B.M.A.: Council.
AUG. 4.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phœnix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 235, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia.

Editorial Notices.

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All communications should be addressed to the Editor, THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales (Telephones: MW 2651-2.)

Members and subscribers are requested to notify the Manager, THE MEDICAL JOURNAL OF AUSTRALIA, Seamer Street, Glebe, New South Wales, without delay, of any irregularity in the delivery of this journal. The management cannot accept any responsibility unless such a notification is received within one month.

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